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THE TECHNIQUE OF PERINEAL EXCISION OF PROSTATIC URETHRAL ADENOMA WITH END-TO-END ANASTOMOSIS.

By M. GRAHAM SUTTON,
Brisbane.

IN a previous article (*vide* THE MEDICAL JOURNAL OF AUSTRALIA, Volume I, 1942, page 425), evidence was brought to show that the obstruction occurring in old men and commonly described as prostatomegaly is in fact due to an adenoma arising from the mucosal or submucosal glands, or from both, of the prostatic urethra, and not in the prostatic glands proper, as has been taught for a long time past. As a result of the changed viewpoint as to the nature and position of the hyperplastic overgrowth resulting in the development of the obstructing adenomata, it becomes necessary to alter one's conception of its surgical relief.

The logical treatment of a large benign tumour of the prostatic portion of the urethra is, I submit, to excise it by the most direct route, and the best way to reconstruct the urethra thereafter is to make an end-to-end anastomosis, just as one does in the case of an adenoma of the small intestine. Such an operation for adenoma is surely excision of the prostatic portion of the urethra with end-to-end anastomosis, and not prostatectomy. This operation is most logically performed by the perineal route, and in fact it is well-nigh impossible by the suprapubic route. Clifford Morson makes a laudable attempt at end-to-end anastomosis through his instrument the "prostatic speculum"; but from his own description and diagrams it is clear that he does not accomplish more than the coaptation of the trigonal flap, which he draws down into the prostatic cavity close to the torn urethra at one point only (*Surgery, Gynecology and Obstetrics*, June, 1939, page 1060).

In the *British Medical Journal* of May 9, 1941, O'Stanley Hillman describes a stitch manœuvre designed with the same object in view.

Such operative steps, while they are reconstructive, do not amount to end-to-end anastomosis. Harry Harris did not attempt so much, and I understand that he scarcely expected primary union of the trigonal "flap" to the wall of the prostatic cavity in more than a few cases.

In parenthesis, let me remark that when no enlargement is felt *per rectum* but the patient's symptoms warrant it, and when early nodules are seen in the prostatic portion of the urethra, electrical prostatic resection is the rational procedure and is surgically sound in such cases. Silverton advocates this procedure as soon as symptoms make their appearance; the rationale of his practice of recommending electrical resection as a prophylactic procedure, so to speak, is found in the contention conveyed in my previous article.

However, G. Gilbert Smith (*The Journal of Urology*, August, 1939, page 145) expresses himself so well that I cannot do better than quote him verbatim:

> In my own practice I prefer to confine the use of resection to those patients whose prostatic obstruction is not suitable for enucleation. If the lateral lobes are estimated to measure over 3 cm. in diameter, I believe that a better functional result can be secured, with no greater risk to the patient and with only a slightly longer stay in the hospital, by using the perineal approach. If the patient cannot be prepared by catheter drainage or if there are complications such as diverticulum, very large stone or tumour, I do a two-stage suprapubic operation. I prefer to remove the prostate by open operation rather than to submit the patient to multiple resections.

With regard to the perineal operation he makes the following statement:

Perineal prostatectomy is a highly satisfactory operation to those who are familiar with the technique. The field of operation is in full view and bleeding vessels can be ligated. Post-operative shock and ileus are rare. The functional result, provided one enters the urethra well behind the external sphincter, should be perfect. It is an operation which must be done with exactness and not in a slip-shod manner; the bungling surgeon had best leave it alone.

The possible dangers are those incident to faulty technique, i.e., injury to the external sphincter and injury to the rectum. In the vast majority of cases operated on by this route, convalescence has been smooth, post-operative febrile reaction slight, restoration of function rapid; the patient is discharged from the hospital between two and three weeks after operation. Perineal prostatectomy is especially helpful in very obese patients.

hæmorrhage by suture, thus making primary closure possible and practicable.

In the perineal field, Young in America carried on the work of the European surgeons Proust and Alberran. He popularized and has persistently advocated perineal enucleation, and later systematized, as did Hinman and others, the reconstruction of the prostatic tissues. Belt, Ebert and Surber (*The Journal of Urology*, April, 1939) described "a new anatomic approach in perineal prostatectomy". In this, although they do not describe it as such, they have almost perfected the technique of what I consider should be regarded as "excision of the prostatic portion of the urethra for adenoma with end-to-end anastomosis" of the prostatic portion of the urethra to the neck of the bladder and complete closure. In describing the technique of this operation I have incorporated some

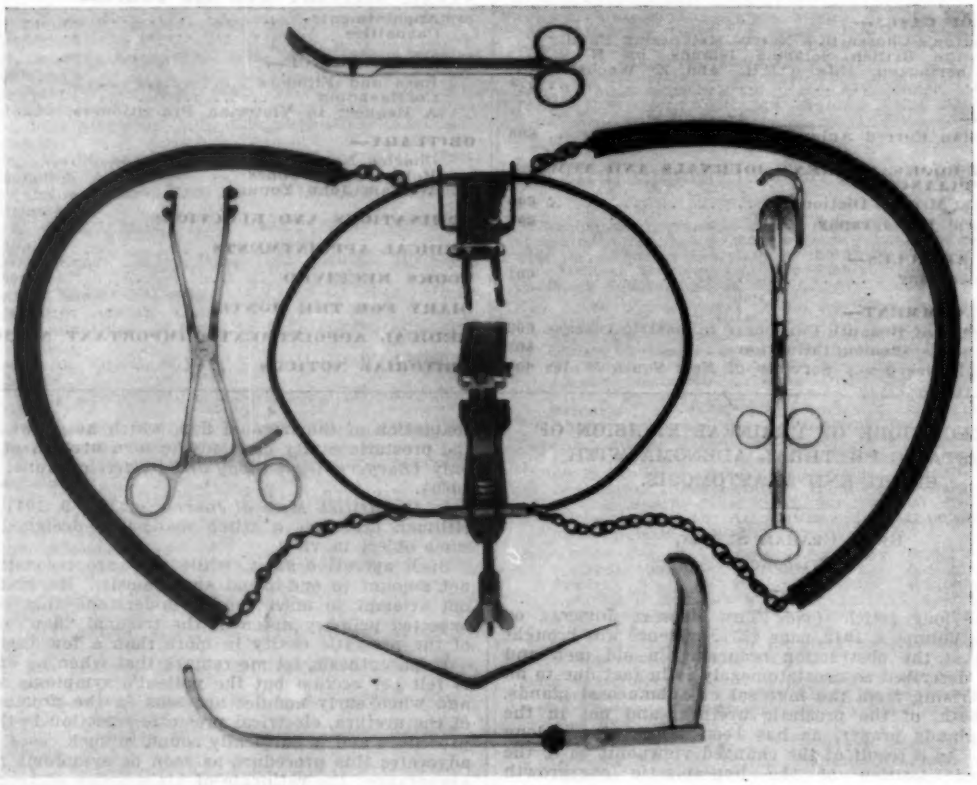

FIGURE I.

Photograph showing the self-retaining retractor which I have devised and made for perineal prostatic surgery. The lower blade is adjustable for traction, cant and length of blade. The upper one is self-aligning and is spread by rack and pinion. To the right is the special prostatic urethrotome, to the left the spreader. Above are the scissors curved on the flat and on the edge. Below is Teale's gorget and Belt's sound.

While I endorse this as a sane and practical view, I do not confine myself to perineal prostatectomy even for the smaller adenomata, and I allow myself to be guided by such circumstances as the place of operation, the type of patient and other technical considerations.

Just as the suprapubic operation has been evolved step by step by individual efforts on the part of surgeons who were masters of their art, so with the perineal operation. In England, Freyer popularized the suprapubic method. John Thompson Walker improved on Freyer's technique, introducing visualization of the site of operation, as well as suture and toilet of the bladder hiatus. Harry Harris perfected and popularized the technique of reconstruction of the prostatic cavity and bladder neck and also controlled technical manœuvres, which I think make for perfection and are conducive to sound primary union layer to layer.

One of these is original and calls for the use of a special instrument I have devised for the purpose. Other points have been discussed or suggested in the American literature concurrently with my endeavour to improve upon my own technique; my indebtedness for these I fully acknowledge. One is struck with the fact that the same difficulties confront us all.

The Operation.

George De Tarnowsky has made the following remarks:

Operating room ceremonial is in need of re-adjustment. Nurses and interns—and some surgeons—are obsessed with the belief that the preparation of the field of operation,

carried out with an almost religious ritual, will in some mysterious way prevent post-operative shock and intestinal paresis. In the observance of this ritual there is an enormous wastage of towels, sheets, suture material and solutions. Gentleness in handling tissues is an art that needs more emphasis than it is at present given in our teaching and writing.

Pre-operative starvation, purging and frightening are potent factors in the causation of post-operative shock, intestinal paresis and protracted convalescence.

The simplest surgical technique, based on accurate anatomic knowledge of the tissues involved, will give the best results.

In discussing Joseph McCartney's critique of present methods in the surgery of the prostatic gland, Ralph H. Jenkins has made some apt remarks (*The Journal of Urology*, May, 1941, page 434):

This discussion of the treatment of prostatic hypertrophy is confusing. In all the reports as to the proper operative procedure, I find that the surgeons have no basis for a decision as to what treatment they should institute. I think it would be far better if we based our surgery upon the pathology of the prostatic obstruction rather than upon some particular operation which we believe to be the best, whether we have tried the others or not.

Spinal anæsthesia is induced. The patient is then put up in the exaggerated lithotomy position. By this I mean that the head of the table is lowered to a steep angle and the buttocks are raised on a sandbag so that the perineal skin surface is as nearly horizontal as possible. This is important, and the more nearly it is attained, the easier becomes the reconstructive stitching. It is much easier to obtain this position with the tall, slim patients than with the short, obese type; but the latter type are easier to operate on by this approach than by the suprapubic one.

The skin of the perineum, buttocks, thighs and genitals is finally prepared with spirituous biniodide solution.

The patient is then draped as follows. A leg bag is thrown over each flexed thigh and leg and clipped round the upper part of the thigh. A screening towel is hung over the anus and is fixed at three points. A stitch fastens it to the anal skin in the mid-line in front, and it is clipped on each side to the leg drapes. A "cravat" is placed round the scrotum and then crossed over the root of the penis anteriorly and clipped again. Finally a small towel is laid flat across the lower part of the abdomen.

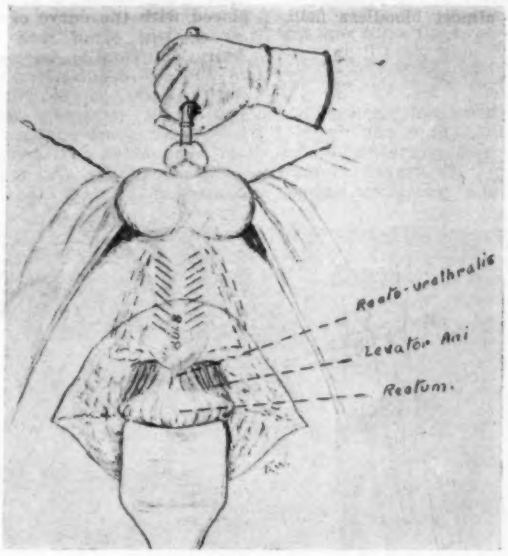

FIGURE II.

The wound has been deepened so as to show the recto-urethralis and *levatores ani* muscles. The position of the bulb of the urethra and of the rectum is also indicated. Belt's sound is being used to prise the prostate down towards the perineum and the operator. The posterior edge of the urogenital diaphragm is shown.

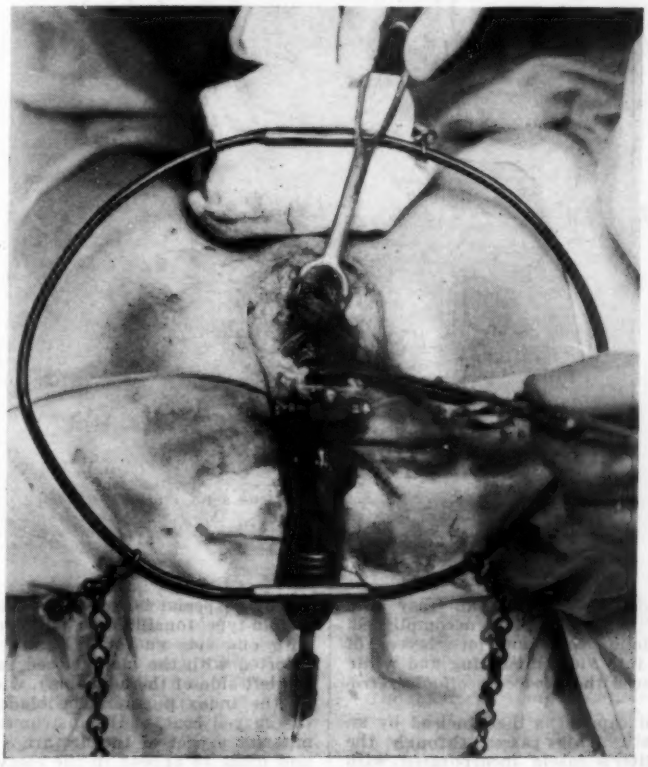

FIGURE IVA.

Showing the mechanical retractor frame in place and the sound in the urethra. The urethrotome is in position ready to cut the urethra at the lower pole of the adenoma.

The incision adopted is that suggested by McCarthy (*The Journal of Urology*, May, 1941) without the vertical limb over the bulb practised by Johnson, which is unnecessary (*The Journal of Urology*, December, 1940, page 828). Flaps are never desirable if they can be avoided, and so I make a small transverse incision where I judge the posterior edge of the urogenital diaphragm to be situated, and then extend this by two oblique lateral incisions, one on either side, extending almost to the medial margin of the *tuber ischii*. In making these three small cuts I endeavour to include a thick, truncated mass of skin and fat as far from the anus as the exigencies of the operation will allow.

Belt's incision is too near the anus for after-care; nevertheless his approach beneath the external *sphincter ani* does make a more direct approach possible. This advantage may be found to outweigh the disadvantage mentioned.

It is, however, not necessary to burrow into the ischio-rectal fossa on either side of the median perineal raphe, as has been pointed out by McCarthy (*The Journal of Urology*, May, 1941, page 428). The fibres of the median raphe can be sufficiently sensed by the index finger when a retractor pulls the posterior edge of the wound gently backwards. They are then divided by scissors midway between the posterior edge of the bulbo-urethral muscle and the anal canal. Their division allows of the exposure, strictly in the mid-line, of the recto-urethralis muscle after separation of the edges of the *levatores*

ani with the finger aided by the handle of the knife.

Before either of these steps, a 1 in 10,000 solution of adrenaline in saline solution is injected into the fibro-fatty tissue and towards the posterior surface of the prostate so as to render bloodless the already almost bloodless field.

A special sound suggested by Belt is passed into the bladder (Figures I and II). The fibres of the recto-urethralis muscle are then separated in the antero-posterior direction—that is, in the direction of their fibres and parallel to any autonomic nerve fibres that may be present (*vide* Latarjet, "Anatomy of Hypogastric Nerves and Ganglia").

At this stage the edges of the *levatores ani* may be retracted by a spreader I have devised for the purpose (Figure I). Some more adrenaline solution is then injected into the region of the apex of the prostate and into what one judges to be the cleavage plane between the adenoma and the compression capsule. It is now my custom at this stage to insert my special self-retaining perineal retractor which is shown in the illustrations.

By a levering action of the sound in the urethra the assistant depresses the prostate into the wound and, the recto-urethralis muscle having been brushed aside, the posterior layer of the fascia of Denonvillier is exposed. This is only a thin membrane and is therefore easily overlooked. Unless one knows of its anatomical existence, one is apt to get into difficulties here with the separation of the rectum. Dissection with the gauze-covered finger at this point is dangerous.

This fascial layer must therefore be incised transversely at the "recto-prostatic junction", whereupon an easy and safe separation of the rectum backwards is accomplished. When this has been done the anterior layer of Denonvillier's fascia comes into view, glistening and white (Figure III). One has entered the *espace décollable retro-prostatique* (of Proust).

The prostatic compression capsule is then incised by an inverted U-shaped incision. This passes through the anterior layer of Denonvillier's fascia incorporated with the true prostatic capsule and on through the compressed prostatic tissue behind the adenoma. It is proper not to carry this U incision so deeply as to cut into the underlying adenoma or into the urethra. It should be placed with the curve of the U almost at the apex of the prostate (not into the prostatic part of the urethra between the apex and the superior layer of the urogenital diaphragm). Its two limbs run parallel to the margins of the *levatores ani* muscles.

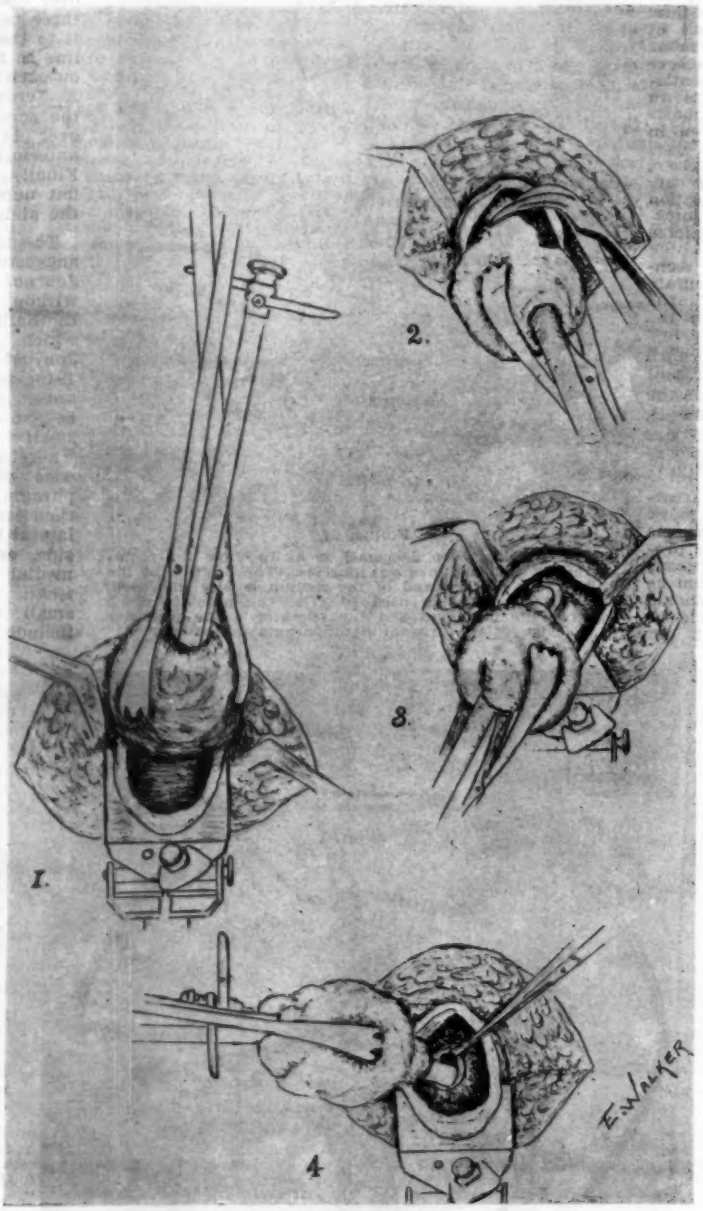

FIGURE V.

The adenoma is now exposed by separation of this flap of "posterior lamella" or "compression capsule" with the handle of the knife. The index finger is then gently inserted between the adenoma and the compression capsule, in the cleavage plane, near the lower "pole" of the tumour and a little to one side so as partly to separate it. The same is done on the other side.

Now comes a most important step in the operation, namely, the division of the urethral wall, mainly mucosal, where it passes off the adenoma near the apex of the prostate, but inside the compression capsule. Previous descriptions, notably Belt's, have directed its division by scissors in two stages. First the urethral lumen is opened by one cut on its posterior (dorsal) aspect, then the urethral sound is removed and a catheter is passed into the bladder through the incision and its contents (urine and lotion) are evacuated. The catheter is then discarded. Secondly, the anterior (ventral) portion of the urethra is divided, the urethra being thus completely severed.

In the operation here described this double procedure is simplified and the division of the urethra is made in one clean cut by a special home-made "urethrotome". It consists of an old-type tonsillotome with round (not oval) fenestra, with one side cut out (Figure I). The nose of this is inserted with the blade closed into the cleavage plane (on the left side of the adenoma), widened as already described by the index finger. The blade is now drawn back and the curved beak of the instrument is insinuated round the anterior aspect of the urethra (with its contained sound) and made to appear in the cleavage plane on the opposite

side. The partial ring of the urethrotome now encircles the urethra. The sound is removed from the urethra and the blade of the instrument is shot home just as in tonsillectomy by the guillotine method (Figures IVA and IVB). The result is that, with a click, the urethra is severed completely and cleanly; moreover, there are no tags if the blade is keen. A Teale's gorget is passed into the proximal end of the cut urethra, and along its groove a catheter is inserted into the bladder so as to draw off its contents. This done, the prostatic (Young's short perineal) tractor is inserted into the bladder by the same means, whereupon its blade is opened to allow of traction. The adenomatous mass is drawn steadily downwards towards the operator and the freeing of the mass is proceeded with. This is done by the application of thyreoid clamps for local traction while the finger prises it out (Figure V, 1).

As the separation proceeds towards the base of the prostate (still inside the compression capsule) aided by blunt dissection, a cuff of bladder mucosa surrounded by the vesical neck tissue, in which the circular fibres can be plainly seen, comes into view. This cone of mucosa, passing off the inner surface of the adenomatous mass into the interior of the bladder, is now divided with double curved septum scissors, either dorsally or ventrally, whichever is easier (Figure V, 2).

The cut mucosal edge (bladder) is grasped with Allis forceps to keep it from retracting. Then the cut is continued round the whole circumference of the cone of bladder neck mucosa (Figure V, 3).

The adenoma of the prostatic urethra has been excised! (Figure V, 4.) No other prostatic tissue has been removed. This suggests a short title for the operation—perineal excision of prostatic urethral adenoma (Figure IX).

With the severance of the mucosa of the bladder neck comes the main hæmorrhage of the operation. This is rarely copious, but it is usually troublesome. However, while the main bleeding points are being picked up it is often helpful to employ suction. These points are to be found on the wall of the bladder neck, inside the capsule, as well as in the edge of the mucosa. They are underpinned with a needle and suture and tied off.

W. W. Scott, of Rochester, New York, has good advice to offer on this stage of the operation (*The Journal of Urology*, March, 1941):

In answer to Dr. McCarthy's concern as to the condition of the internal sphincter following perineal prostatectomy, I might say that it is always my practice to repair the internal sphincter at the end of operation if necessary. In most cases, if reasonable care is exercised in performing this operation, the hypertrophied tissue can be removed from the vesical neck without dilating the internal sphincter very much. This procedure not only tends to prevent incontinence but also aids in the control of bleeding.

A catheter is passed from the external urinary meatus through the bulbous urethra and out into the perineal wound and drawn forward here so as to act as an anterior tractor (Figure VI, 1). This reveals the cut edge of the urethra admirably and greatly aids the insertion of the stitches. A number 1 chromicized catgut stitch is passed through the anterior lip of the bladder mucosa and then through the corresponding lip of the urethra and tied. A boomerang cleft palate needle greatly facilitates the introduction of this and the three subsequent stitches (Figure VI, 2). After this anterior stitch has been tied, the tip of the catheter is passed into the bladder neck and acts as a form over which to complete the anastomosis (Figure VI, 3). Two lateral stitches are then inserted, one on either side. A final stitch completes the anastomosis of the urethro-vesical tube on the perineal aspect.

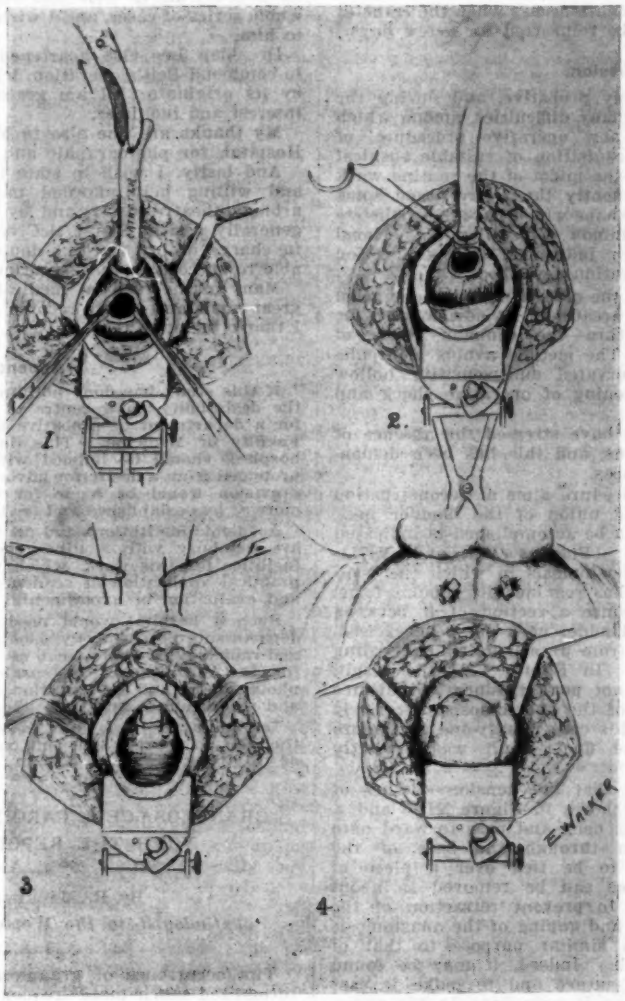

FIGURE VI.

The closure of the prostatic compression capsule is the next step—that is to say, the replacement of the "trapdoor" of the posterior lamella. This is done by inserting a stitch on each side at the lower corner of the lamella, taking a "bite" of the vesical neck so as to obliterate dead space as well as to approximate the cut edges. This is very important, since it is the posterior quadrant of the urethral anastomosis that does not heal kindly.

Two more similar stitches, one on each side, are placed a little further forward, and finally one is placed at the apex of the "trapdoor". In this way the prostatic tissues are restored layer by layer to their anatomical positions (Figure VI, 4). A glove drain is then placed in position. Two or three transverse stitches are passed so as to approximate the edges of the *levatores ani* muscles and the more superficial part of the wound is closed with plain catgut. Skin sutures are then inserted. A subcuticular catgut stitch may be advantageous.

The bladder is now irrigated to clear it of clots and the catheter is strapped in place.

I have found that suction drainage is a help in keeping the wound dry in the first week, but it is not essential. The lateral position (Sim's position) is the best in which to nurse these patients. They may be turned from the left to the right lateral position as often as convenient.

The bowels are kept confined for five or six days so as to prevent soiling of the perineal wound.

As the perineal skin area is one which naturally becomes very moist, it is occasionally of advantage to place a cradle and electric light bulb under the bed clothes to dry it off. If good approximation of mucosa and careful stitching of the prostatic "trapdoor" have been carried out, leakage does not occur.

This is the ideal. It is, however, not always obtainable, and sometimes there is a little leakage after the fourth or fifth day or after the bowels act; but this ceases again by about the tenth to fourteenth post-operative day in favourable cases. If leakage again occurs when the catheter is removed, it may have to be reinserted for a few days.

Discussion.

This study has been largely probative, and during the early stages was beset with many difficulties, among which were those of learning a new operative procedure, of surgical assistance, of the acquisition of suitable surgical instruments and so forth, in the midst of the routine work of a busy hospital. Consequently there have been some ill-chosen cases and a few mishaps which have, nevertheless served to illustrate the common difficulties of perineal surgery and the necessity for judgement in the selection of suitable cases for the operation described.

In spite of all this I am of the opinion that the operation approaches the ideal in the treatment of adenoma of the prostatic part of the urethra—the common cause of obstruction of the bladder. The method avoids manipulation through a highly innervated and sensitive hollow viscus, with consequent lessening of operative shock and of post-operative discomfort.

All writers on the subject have stressed the absence of post-operative shock and ileus, and this has been demonstrated in my series of 20 cases.

Further than this, the procedure aims at reconstruction of the urethra by end-to-end union of the bladder neck to the urethra. That this can be accomplished is indicated by the two urethrograms (Figures VII and VIII). Figure VII shows a good anastomosis in which the prostatic portion of the urethra has regained its tubular form. It is of course shortened, since a section of it between the verumontanum and the bladder neck has been excised. This urethrogram is taken from a case in which healing occurred in fourteen days. In Figure VIII the result, while quite satisfactory, is not perfect, since it indicates a failure of primary union of the anastomosis posteriorly and to the right side. In this case twenty-one days were required for healing. The final result was perfectly satisfactory.

Hence it is recommended that two tension stitches of dermal suture be passed as shown in Figure VI, 3 and 4, to take a bite of the bladder neck and pass forward onto the skin of the perineum through the base of the triangular ligament, there to be tied over a piece of rubber tube. These sutures can be removed in about ten days. Their object is to prevent retraction of the trigonal area of the bladder and gaping of the anastomosis posteriorly. They serve a similar purpose to that of Harry Harris's crown stitch. Indeed, it may be found advisable to insert such a suture and to make it pass over the interureteric bar, as is now done in his suprapubic operation. This, however, is merely a suggestion.

Incontinence of urine has not been in evidence; it has amounted only to slight stress incontinence in two cases. Similar inconvenience does occur after the suprapubic operation also, but it is not common. As pointed out in my previous article, this complication is fast disappearing from the scene after the perineal operation, in consequence of the realization that the internal sphincter must be respected no less than the external sphincter. I feel quite sure that this is only a question of operative technique and not of operative approach.

Finally, one is struck with the lower operative morbidity rate associated with the perineal operation. The statements of the patients make this apparent, and they have to be heard to be appreciated fully.

Acknowledgements.

I should like to place on record my gratitude to Professor H. J. Wilkinson, of the department of anatomy, University of Queensland, for his enthusiasm and encouragement in this study, and to thank him for the trouble he has taken in making sections of the whole prostate and in the photographic work involved in these articles.

Had it not been for the keen interest and continued advocacy of the perineal route by Dr. E. S. Meyers, lecturer in anatomy and operative surgery at the University of Queensland, I should probably never have embarked on a study of it. He has shown great interest in the whole series of cases, and I wish to express my appreciation to him.

Dr. Alan Lee also heartened me, in that he was able to commend Belt's operation, which he had seen performed by its originator. I am grateful to him for his kindly interest and inquiries.

My thanks are due also to Mr. Knight, at the Brisbane Hospital, for photographic and urethrographic work.

And lastly, I wish to state that without the competent and willing help afforded me by Sister M. McDonald, urology theatre sister, and by the operating theatre staff generally, and by Sister McCreevy and Sister A. Thompson in charge of my ward, I doubt that I should have been able to succeed in the operation at all.

Many of the resident medical officers too have rendered great assistance with records and specimens, for which I thank them.

Appendix.

If this study has done nothing else, it has made apparent the desirability, in a centre of learning such as Brisbane, for a department of probative medicine and surgery in the Faculty of Medicine. This, in the form of a university hospital, should be imbued with a spirit of progress and protected from a desire for adventure. At such an institution provision would be made for the assessment of methods more or less established and for the testing of little tried ones.

Academic institutions and departments and clinical centres are too busy with routine teaching and practice, or lack facilities for this work, which requires a strict eye to the practical application of academic knowledge and the sifting and evaluation of experimental data.

Such a hospital would need to have, besides the usual departments of pathology, biological chemistry, bacteriology and radiology *et cetera*, such ancillary departments as a shop for the development of surgical and medical apparatus, photographic and reproduction studios, medical statisticians and record offices and such like.

Doubtless St. Lucia and its environs would be able, after the war, to provide sufficient patients for a 300-bed hospital of this type.

GRANULOSA-CELL CARCINOMA OF THE OVARY, WITH THE REPORT OF A CASE.

By R. MACKEY, M.B., B.S.,

Pathologist to the Women's Hospital, Sydney.

THE occurrence of granulosa-cell carcinomata is being recognized much more frequently in recent years. Meyer was one of the first to draw attention to these tumours and their peculiar properties, about thirty years ago, and in the past ten years Novak[1] and R. Meyer[2] among others reported series of cases summarizing the main characteristics of these tumours. From a histogenetic point of view their origin is very interesting. At first they were thought to arise from the granulosa cells of follicles, particularly in view of the resemblance of the type cell to granulosa cells, and also in view of the occurrence in the tumours of bodies similar to the Call-Exner bodies seen in the follicles in the ovary of mature rabbits and resembling somewhat the human follicle. The occurrence of the tumours in children and in post-menopausal adults threw doubt on this theory of origin, and Meyer has put forward the view that the tumours arise from "rests" of granulosa cells, which have been demonstrated

in the ovaries of young children and adults. Walthard subscribes to a somewhat similar view. As some of these tumours show thecal as well as granulosal properties, the origin may go even further back, as these two types of tissue, the former connective tissue and the latter epithelial, have a common source of origin, the ovarian mesenchyme. Geist[4] tends to confirm this view in experimental studies. The occurrence of the pseudo-follicles is explained on the basis of cystic degenerative changes.

Hormonic Properties.

Large amounts of œstrogenic hormones have been demonstrated in these tumours,[5] and the biological effects of these hormones produce symptoms and signs which give major clues for diagnosis. Increased quantities of œstrin are present in the blood and excreted in the urine; breast and endometrial changes occur and secondary sex characteristics develop.

Pathology.

Macroscopic Appearances.

The tumours may vary from a few millimetres in diameter to a size which may fill the abdominal cavity. Usually they are about the size of an adult kidney and ovoid or reniform in outline. The capsule is smooth, but lobulated, and thin-walled cysts may be just beneath it. In cut sections they may be solid, as is generally the case in the smaller tumours, or may contain cysts of various sizes in the larger types. The cut surface appears granular with generally a yellowish colour in the solid areas. Connective tissue septa divide the tumour into irregularly lobulated sectors.

Microscopic Appearances.

The essential microscopic feature is the granulosa cell with its large nucleus and clear cytoplasm. These cells may arrange themselves into clusters and rosettes; the formation of "pseudo-follicles" with a central cystic space surrounded by radiating granulosa cells in antipodal layers is generally observed. Often the larger cysts are lined by a thick layer of granulosa cells containing many smaller cysts and follicles. A coincident overgrowth of connective tissue generally occurs and, according to its density, so various patterns of the type cell are produced; this has given rise to the description of cylindromatous, gyriform, folliculoid, diffuse, adenomatous and sarcomatous types. All of these are the same intrinsically, and often in various parts of the same tumour all these patterns may be observed. The sarcomatous type is an interesting possibility when it is considered that both the type cell and the connective tissue have a common mesenchymal origin. Hyaline degeneration is commonly seen in the connective tissue. As would be expected from a histogenetic basis, luteinizing forms of the tumours have been reported. The endometrium generally shows changes indistinguishable from the simple hyperplasia due to prolonged œstrogenic influence, which in fact it really is.

Clinical Characteristics.

The occurrence of the tumour falls into three main groups, each with a different clinical picture: the prepubertal, the reproductive and the menopausal. Novak and Brawner[1] report 15% of their cases in the age group one to ten years, 36% in the group eleven to forty years, and 48% in the group forty to seventy years. In the prepubertal era the first sign is generally precocious menstruation, with development of secondary sex characteristics. In the reproductive group menstrual irregularities and excess are the rule. This may alternate with periods of amenorrhœa, the so-called "polyhormonic amenorrhœa". In the post-menopausal patient the onset of a menstrual type of bleeding most commonly occurs; this may be accompanied by a renewed sexual outlook, development of the breasts, increase in size of the uterus—in fact, almost a "rejuvenation". The finding of an associated ovarian tumour completes the diagnosis. The uterus is generally enlarged to some degree. Cases have been reported in which virilism and hirsutism have occurred and also in which the breasts have secreted. A weakly positive response to the Aschheim-Zondek test has also been reported in a few cases. Bilateral cases have been reported.

Malignancy.

It is generally stated that the malignancy rate is not so high as that of ovarian carcinomata in general. Novak[2] from a clinical survey estimated it to be about 28%. It appears impossible at the moment to assess the malignancy on an histological basis.

Report of a Case.

The patient, who was a single woman, aged thirty-two years, complained of bleeding *per vaginam* of six months' duration. Three years ago she had amenorrhœa for two years followed by very irregular menstrual periods up to the onset of the present bleeding. The menarche had been at the age of thirteen years, and her menstrual periods had always been irregular and accompanied by dysmenorrhœa.

On examination a small amount of dark blood was found to be coming from the cervix, the uterus was slightly enlarged, and a freely movable tumour, the size of a full-time fœtal head, was present in the posterior fornix. No other abnormalities were detected. A diagnosis of granulosa-cell carcinoma of the ovary was made, and at operation a characteristic tumour was found replacing the right ovary. It was roughly oval, measuring 11·0 centimetres in the long diameter and 7·0 centimetres in the transverse. The outer surface was white, smooth and lobulated, and in cut sections irregular, yellowish masses of solid tissue were seen to be separated by cystic spaces and connective tissue trabeculæ (Figure I). The largest cyst measured 1·5 centimetres in diameter and the smallest a few millimetres. Microscopically the granulosa cells showed a prevailing tendency to be arranged in clusters around a central space and thus resemble primordial follicles (Figure II). The walls of the larger cysts were lined by a thick layer of granulosa cells, in which the primitive pseudo-follicular formation could be clearly seen (Figure III). In different blocks from the same tumour cylindromatous and pseudo-adenomatous patterns were seen.

Comment.

A typical case of granulosa-cell carcinoma of the ovary arising in the reproductive phase is presented. Investigation of the clinical history revealed œstrogenic upsets, in the occurrence of two years' amenorrhœa, irregular menstruation and continuous vaginal bleeding of six months' duration. The macroscopic and microscopic features of the tumour were typical of granulosa-cell carcinoma of the ovary.

Acknowledgements.

Acknowledgements are made to Dr. R. Bowman and Dr. A. Grant, of the honorary medical staff of the Women's Hospital, Sydney, for their permission to publish the case report.

References.

(1) E. Novak and J. N. Brawner: "Granulosa Cell Tumors of the Ovary: A Clinical and Pathological Study of 36 Cases", *American Journal of Obstetrics and Gynecology*, Volume XXVIII, November, 1934, page 637.
(2) R. Meyer: "The Pathology of Some Special Ovarian Tumors and their Relation to Sex Characteristics", *American Journal of Obstetrics and Gynecology*, Volume XXII, November, 1931, page 697.
(3) E. Novak: "Gynecological and Obstetrical Pathology", 1940.
(4) S. H. Geist: "Histogenesis of Certain Ovarian Tumors and their Biologic Effects", *American Journal of Obstetrics and Gynecology*, Volume XXX, November, 1935, page 650.
(5) A. Palmer: "Estrogenic Hormone in the Urine and Tumor of a Patient with a Granulosa Cell Tumor of the Ovary", *American Journal of Obstetrics and Gynecology*, Volume XXXVII, March, 1939, page 492.

MEASUREMENT OF THE DRYING CAPACITY OF WIND.

By C. E. COBLETTE, M.D.,
Sydney.

AT constant pressure, for each level of temperature there is a corresponding weight of water vapour that can be contained in a given volume of the atmosphere. The weights for standard volumes and pressures are recorded in books of reference.

When air is warmed, the same volume can contain more and more water vapour. When the maximum capacity for any given volume of air is reached, the air is said to be saturated, as far as that temperature and pressure are concerned. It is customary to express the degree of saturation as a percentage of the total ordinarily possible at that temperature. If we know the total weight of vapour that would be present at saturation point, that is, at 100% of saturation, we can calculate the weight present at any given degree of saturation, and therefore, by difference, the weight that would have to be added to bring the saturation up to 100%. This measures the water-absorbing capacity of that volume of air, and we can express it as grammes per cubic metre of still air at that temperature and pressure. If we now multiply by the wind velocity in metres per second, we get a figure representing the water-absorbing capacity in grammes per cubic metre-second. Or if we wished, we could express it in any other scale of measurement, as in grains per cubic foot, and so on. Thus we have measured the drying capacity of the wind, or of the ventilating current concerned.

When, in ordinary speech, we speak of a dry wind or of a moist wind, we mean that the one absorbs moisture better than the other. The terms refer to desiccating property, not to absolute water content. The absolute weight of water vapour may be much greater in an unsaturated moisture-absorbing warm wind than in a nearly saturated cold wind of equal velocity, because the warm air can hold much more.

It must not be thought that the capacity for water absorption indicates the weight of vapour that will in fact be absorbed by each cubic metre. The content exposed to effectual contact will vary with a number of conditions, but in any case it will in practice include only a small proportion of the total content of the cubic metre. It would be beside the point to discuss here the conditions that may modify the rate of absorption in any given case. At present we are concerned only with measurement of potentialities, and nothing alters the fact that the drying capacity of an air current depends fundamentally on its degree of saturation, its temperature, its pressure and its velocity. If we have this information, we can compare one wind current with another as regards drying capacity.

In the past, it has not been possible to state definitely and certainly that the apparently dry wind of today has a greater or smaller drying capacity than that of yesterday, or of a week ago, or of some other place. If it has been greater, we could not say how much. We have not got so far as measuring the drying capacity, and therefore have not been able to express and record it in figures. Without such quantitative information, it is difficult or impossible to handle questions, and we have to substitute guessing for knowledge. The system of measurement put forward here overcomes this difficulty, giving us a simple and rational method of coordinating and recording.

In order to make the necessary calculations and arrive at the desired result, we need the ordinary meteorological data as to temperature, pressure, degree of saturation and wind velocity, together with certain fundamental data, calculated once for all, and given here. For problems in ventilation or for industrial use, the data required for the same purpose are similar.

The fundamental data just referred to are the weights of water-vapour that can be held by a cubic metre of air at various stated temperatures, and at a standard pressure. In the present case 1,000 millibars has been adopted as the standard pressure. Correction to any other standard is easily made.

The figures are shown as a table (Table I) giving the weights of one cubic metre of water vapour at temperatures from 0° to 55° C. at a pressure of 1,000 millibars. This is the weight present at saturation point at the temperatures mentioned.

The figures from 0° to 40° C. are derived from Table 74 of "The Smithsonian Meteorological Tables", fourth revised edition, 1918. Since the Smithsonian table does not extend higher than 40° C., the present author has had to calculate for himself the values from 40° to 55° C. This was done according to the method used in constructing the Smithsonian table, as described in the introduction. The accuracy of the figures has been carefully tested by tracing the curve of differences on squared paper.

The figures were carried to 55° C., not because winds at that temperature are likely, but because they are capable of industrial application.

TABLE I.

Weight of One Cubic Metre of Saturated Vapour at 1,000 Millibars Pressure in Grammes at Degrees Centigrade.

Temperature.	Weight.	Temperature.	Weight.	Temperature.	Weight.
+ 0°	4·7834	+19°	16·097	+38°	45·600
1°	5·123	20°	17·073	39°	47·971
2°	5·486	21°	18·086	40°	50·446
3°	5·868	22°	19·175	41°	53·027
4°	6·276	23°	20·308	42°	55·722
5°	6·707	24°	21·497	43°	58·527
6°	7·165	25°	22·746	44°	61·459
7°	7·649	26°	24·058	45°	64·507
8°	8·162	27°	25·433	46°	67·681
9°	8·705	28°	26·876	47°	70·996
10°	9·276	29°	28·387	48°	74·438
11°	9·883	30°	29·972	49°	78·018
12°	10·524	31°	31·631	50°	81·744
13°	11·199	32°	33·368	51°	85·642
14°	11·912	33°	35·168	52°	89·662
15°	12·663	34°	37·089	53°	93·835
16°	13·456	35°	39·080	54°	98·192
17°	14·291	36°	41·158	55°	102·605
18°	15·172	37°	43·332		

Use of Table I to Find Drying Capacity of Wind.

If necessary, correct the temperature readings to the Centigrade scale, pressure readings to the millibar scale, and velocity to metres per second. If it is intended to work constantly on other scales than those adopted in Table I, the table can be reconstructed to the scale intended.

The weights of vapour given in the table are for temperatures at intervals of one degree Centigrade. The table can conveniently be amplified by calculating interpolations graduated to tenths of a degree, or by constructing a graphic curve on squared paper. If this has not been done, find the weight in any given case by interpolating as necessary between the figures next above and next below. This gives the weight of vapour that would be present at the stated temperature at 100% saturation, and at 1,000 millibars' pressure.

The meteorological reading gives the percentage of water present, as compared with the quantity necessary for full saturation. Obviously, what remains between the percentage present and 100% is an unsatisfied potentiality for absorbing water. And just as we would find the weight of water actually present in one cubic metre by multiplying the 100% value by the percentage, so would we find the weight value of the water-absorbing capacity. We must multiply by the corresponding percentage fraction.

To correct for pressure, we have to multiply next by a factor corresponding to the ratio of observed pressure to standard pressure, which in the millibar system is very simply expressed. The numerator is the observed pressure, and the denominator 1,000. The factor is, therefore, expressed as a decimal ratio of the observed pressure, obtained by shifting the point three places to the left.

We have now found the drying capacity of one cubic metre at the observed temperature and pressure. All that remains is to multiply this by the velocity in metres per second. The result gives us the weight of water, in grammes, that could be absorbed per cubic metre-second. That is, we have a numerically expressed measurement of the drying capacity of the wind.

It is suggested that the weight absorbable as grammes per cubic metre-second should be read as "units of drying capacity". There is nothing to be gained by translating them into grains per cubic foot.

ILLUSTRATIONS TO THE ARTICLE BY DR. M. GRAHAM SUTTON.

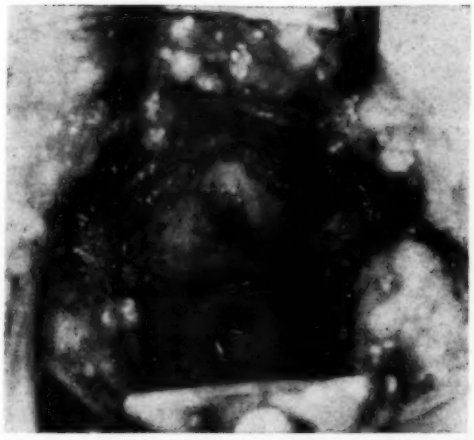

FIGURE III.—Showing anterior layer of Denonvillier's fascia in depth of wound. It is through this and the prostatic compression capsule that the trapdoor will be made during the next step in the operation.

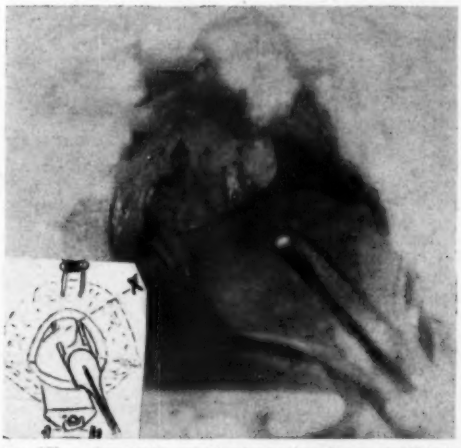

FIGURE IVB.—Prostatic urethrotome in place at distal pole of adenoma. The urethra is about to be divided with one clean cut. This patient died 48 hours after operation from coronary sclerosis. His prostate is shown in Figure X. in the inset the cross marks the urethra.

FIGURE VII.—Urethrogram showing prostate portion of urethra after excision of adenoma with end-to-end anastomosis. The prostatic portion of the urethra has regained its tubular form. Both sphincters are obviously intact. The verumontanum is apparent as a dark spot. The line of union has been made proximal to it.

FIGURE VIII.—Urethrogram showing the prostatic portion of the urethra after excision of an adneoma with end-to-end anastomosis. The bulging irregularity to the right shows that part of the junction did not heal *per primam*. This patient required a urethral catheter for twenty-one days. The end result, however, leaves little to be desired.

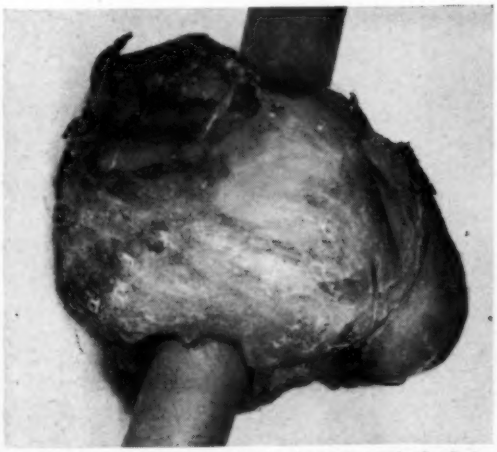

FIGURE IX.—Prostatic urethral adenoma, excised whole. The rubber tube is placed in the section of urethra excised.

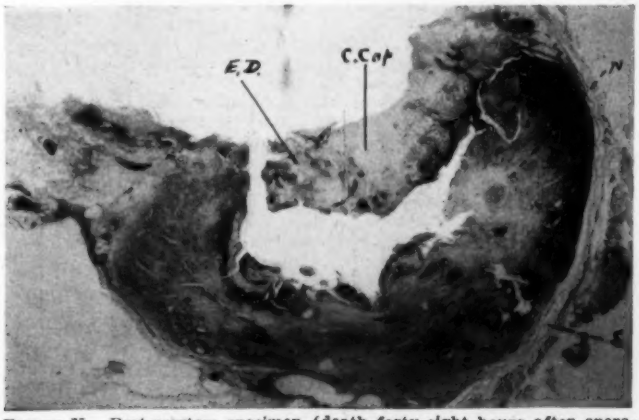

FIGURE X.—Post-mortem specimen (death forty-eight hours after operation) showing the prostatic tissue left behind after excision of an adenoma. Section taken near the base of the trapdoor flap of compression capsule ("C. Cap."). N: nodule which escaped removal; S: prostatic sheath; E.D.: ejaculatory duct.

ILLUSTRATIONS TO THE ARTICLE BY DR. R. MACKEY.

FIGURE I.
Natural size. Trabeculæ, cysts and solid areas are well shown.

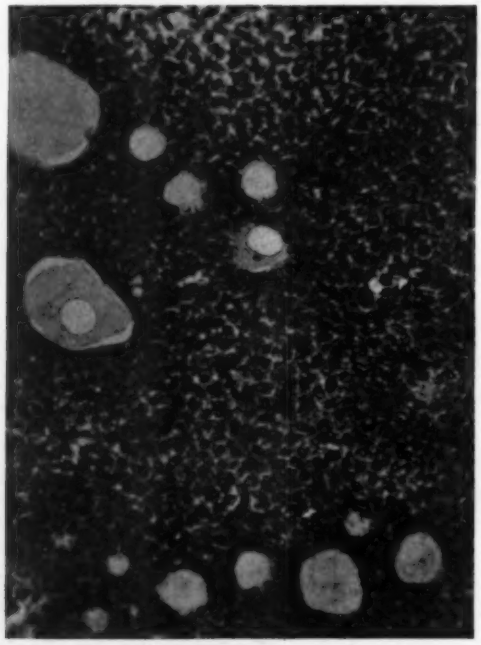

FIGURE II.
Photomicrograph showing structure of pseudo-follicles, rosettes of granulosa cells and follicular fluid. × 240.

FIGURE III.
Part of the wall of a large cyst showing pseudo-follicles. × 116.

TABLE II.

Tabulated Series of Winds, showing Units of Drying Capacity per Cubic Metre-Second.

Number.	Place.	Date.	Time.	Direction.	Temperature.		Humidity. (Percentage.)	Pressure. (Millibars.)	Velocity. (Metres per Second.)	Units per Second.
					Degrees Fahrenheit.	Degrees Centigrade.				
1	Edmonton.	4.1.11	8 p.m.	W.	38·0°	3·33°	81	922·8	16·09	17
2	Marseilles.	9.7.13	6 p.m.	N.W.	75·2°	24·0°	40	1005·4	14·31	186
3	Cairns.	9.2.27	—	S.S.E.	76·0°	24·44°	95	987·1	35·76	39
4	Sydney.	9.6.29	3 p.m.	W.	61·0°	16·11°	34	1007·5	13·4	121
5	Sydney.	3.12.29	3 p.m.	W.S.W.	79·6°	26·44°	29	1004·7	6·26	110
6	Sydney.	14.12.29	12 noon	E.	77·5°	25·28°	80	999·7	0·9	4
7	Sydney.	14.12.29	3 p.m.	W.N.W.	91·2°	32·89°	26	995·6	13·4	353
8	Sydney.	14.12.29	9 p.m.	S.S.W.	68·0°	20·0°	81	998·0	15·65	51
9	Sydney.	25.12.29	3 p.m.	S.E.	76·0°	24·44°	81	1007·5	6·71	28
10	Sydney.	27.12.29	9 a.m.	S.	72·0°	22·22°	50	1013·5	1·8	18
11	Sydney.	27.12.29	3 p.m.	E.	74·0°	23·33°	88	1009·8	0·9	2
12	Sydney.	27.12.29	9 p.m.	N.E.	74·0°	23·33°	86	975·6	1·9	5
13	Sydney.	22.2.30	9 a.m.	N.W.	93·0	33·89°	40	1005·1	11·18	248
14	Sydney.	22.2.30	3 p.m.	W.N.W.	104·7°	40·39°	25	1000·4	10·28	397
15	Sydney.	22.2.30	9 p.m.	W.	81·0°	27·22°	80	1005·4	11·62	60
16	Sydney.	23.2.30	9 a.m.	S.S.E.	74·0°	23·33°	68	1014·9	7·15	48
17	Sydney.	23.2.30	3 p.m.	S.E.	69·8°	21·0°	67	1016·3	6·26	38
18	Sydney.	23.2.30	9 p.m.	E.S.E.	67·9°	19·94°	68	1021·7	5·36	30
19	Sydney.	2.3.30	3 p.m.	N.E.	75·6°	24·22°	64	1022·0	8·05	64
20	Sydney.	14.1.39	1 p.m.	W.	113·4°	45·22°	4	996·9	6·26	391

Degree of Accuracy.

The accuracy of the measurement depends on the accuracy of the records which provide its fundamental data. A short consideration of the data on wind velocity at once shows that the material is capable only of giving approximations. It is customary to record wind velocity in terms of miles per hour in round numbers. If, therefore, a wind velocity is given as 50 miles per hour, it may mean anything between 49·5 and 50·5, a latitude of statement equal to 1% above or below 50. A wind velocity given as 25 miles per hour means anything between 24·5 and 25·5, a statement allowing a margin of 2%. Correspondingly, 10 miles per hour is within 5%. And in addition to this, recording instruments are not extremely accurate. We must therefore regard statements of wind velocity as meaning no more than that the wind was about the velocity stated. For our purposes, the velocities have been translated into metres per second, and the same qualifications obtain.

If data as to velocity are approximate only within 5% or so, the calculations depending on them cannot be more accurate. On the other hand, though not more accurate, they are not likely to be less useful than the original material.

Example.

The calculation of the result in any given case is quite a simple matter, but an example will now be given as a practical demonstration.

The wind at Sydney at 3 p.m. on March 2, 1930, was north-east in direction; the temperature was 24·22° C., the humidity was 64%, the pressure was 1,022 millibars, the wind velocity was 8·05 metres per second. What was the drying capacity of the wind?

According to the table, the weight of water vapour at 100% saturation at 24° C. would be 21·497 grammes.

At 25° C. it would be 22·746 grammes.

The difference is 1·249 and 22% of this is 0·274.

This 0·274 added to 21·497 = 21·772 grammes.

This is the weight of water vapour in one cubic metre at 100% saturation at 24·22° C. The humidity being 64% of this weight, the unsatisfied potentiality for absorption is $100 - 64 = 36\%$, which means $21{\cdot}772 \times \frac{36}{100}$, or $21{\cdot}772 \times 0{\cdot}36$.

The factor for pressure correction is $\frac{1{,}022}{1{,}000}$, or 1·022.

The whole calculation is therefore as follows:

$$21{\cdot}772 \times 0{\cdot}36 \times 1{\cdot}022 \times 8{\cdot}05 = 64$$

= grammes of water per cubic metre-second.

We therefore record the drying capacity of the wind as **64 units.**

Records of a Series of Winds.

In Table II are the records of a series of winds, including the one worked out as an example. The same winds have been examined for another purpose in a previous paper[1] by the present author. In the present table the drying capacity has been measured. The first in the series is a reading from Edmonton, the capital of Alberta, Canada. The second is from Marseilles. The third is from Cairns, Queensland. All the rest are from Sydney, New South Wales. A few notes on the geographical conditions there may be of assistance. Sydney is on the eastern seaboard of Australia. The colder parts of the hemisphere lie south of it, the warmer lie north. The trend of the coast-line for some hundreds of miles south to some hundreds of miles north is roughly north-north-east. The continental land mass lies to the north-west, west, and south-west. It is not proposed to enlarge the discussion of the various winds here, though there is certainly much interesting material.

Summary.

The paper presents a rational quantitative system of measuring and recording the drying capacity of any wind, or of any artificial air current. The results are stated as units per second. Certain necessary data are supplied in a table. The calculation required is short and easy. A series of illustrative examples is added. These show, by measurements, the great variations that occur.

Reference.

(1) C. E. Corlette: "The Heat-Absorbing or Heat-Lifting Capacity of Wind in Relation to the Human Body, with a Table for Calculating it", THE MEDICAL JOURNAL OF AUSTRALIA, Volume I, April 18, 1942, page 453.

Reports of Cases.

HUNTINGTON'S CHOREA IN A NATIVE MELANESIAN FAMILY OF THE BRITISH SOLOMON ISLANDS.

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Senior Medical Officer, British Solomon Islands,

AND

Z. WECHSLER, M.D.,
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THE following cases of Huntington's chorea occurring in Solomon Island natives are considered of sufficient interest to merit report. Huntington's chorea is a comparatively rare disease and, so far as we are aware, has not been previously reported from the Solomon Islands.

Clinical Record.

A native of South Malaita, Erisaho, came under the care of one of us (Z.W.) on account of inability to perform the tasks assigned to him as a plantation labourer. Erisaho is of pure Melanesian stock, aged thirty-two years, unmarried; his height is four feet seven inches and his general condition is poor. He is poorly developed and poorly nourished. His symptoms are stated to have begun seven years ago and to have become much more pronounced during the last four years.

While being examined he was in constant movement, his body being thrown from side to side, his arms making wide sweeping movements upward and outward, his hands moving constantly, and his legs being equally active. He walked with a "dancing" gait.

He is able to check the movements to some extent, and for a short period by voluntary effort. He can complete a single task with his hands; but his movements appear clumsy, and wide excursions hamper his efforts. His lips are in constant involuntary movement, and his speech is slurred and indistinct.

Mentally he is rather dull and apathetic, showing little interest in his surroundings, and he does not mix with the other labourers. There are no gross memory defects, but he is poor in ideas and weak in judgement. He does not realize how little he is able to accomplish, and although he is quite unable to perform the usual plantation tasks, considers himself as fit as before the onset of symptoms.

All his reflexes were found to be normal, and routine physical examination revealed nothing of interest. On account of his condition he was returned to his home as unfit for plantation labour.

It has been found possible to trace his family through two generations. In the accompanying table (Figure I) the names of those who suffered from the disease are underlined. Those who are dead are marked (D).

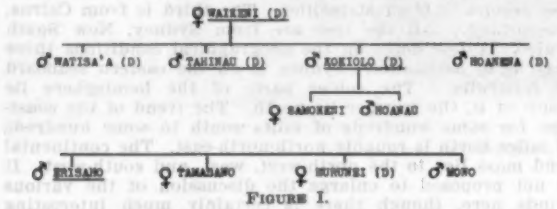

FIGURE I.

It is stated that Tahinau suffered so severely from the disease that if he were given a new coconut mat to sleep on, the mat would be completely destroyed by morning; also that when he attempted to place his tax money on the tax collector's table he so completely upset things that the officer thought he was attempting to steal.

The old men of the village are certain that the disease started with Waikeni. In view of local conditions—isolation (on an island) with absence of traffic and lack of contact with other races—it seems safe to assume that the disorder originated as an autochthonous mutation, which appeared with Waikeni and which affected members of two succeeding generations.

Erisaho is now the only living subject, and provided he has no children the disease may die out. However, as symptoms first appear in adult life and usually between the ages of twenty and forty years, there is still a possibility that other cases may occur among his siblings.

Reviews.

AUSTRALIAN FURRED ANIMALS.

A WELCOME contribution to zoological literature is Mr. Ellis Le G. Troughton's "Furred Animals of Australia".[1] As curator of mammals in the Australian Museum, the author possesses an intimate knowledge of our indigenous fauna, and his book is a notable addition to the excellent series of natural history monographs issued by the publishers in recent years. The work is important, for although more than four hundred species and subspecies of Australian mammals have been described, authentic information as to the type localities, distribution, habits *et cetera* of many species has been difficult to obtain. Mr. Troughton's researches and extensive observations in the field enable him to fill in many of these gaps in our knowledge. His book, however, is no dry-as-dust treatise; attractively written and superbly illustrated, it is a volume that should appeal to scientist and layman alike.

After an introduction devoted to a general consideration of our faunal problems the author proceeds to a description of individual species. In the opening chapter on the egg-laying monotremes, present knowledge of the habits of the platypus and ant-eaters is admirably summarized. The next section, comprising the greater part of the book, deals with the numerous species comprehended in the great subclass Marsupialia. Australia's pouched mammals occur in a wide range of sizes and in an extraordinary diversity of forms, and in introducing each in turn to his readers Mr. Troughton is obviously in his element. His descriptions are comprehensive and minute, but he is never tedious. All known forms inhabiting the mainland and adjacent islands are adequately described and the work of other authors in this field is critically examined. A plea for rigorous protection is the dominant theme of this section. All Nature lovers will share the author's regret that many of our most beautiful marsupials have already been hunted to extinction.

Other chapters of the book are given to the placental or non-marsupial mammals, a class of Australian fauna somewhat neglected by early writers. These include numerous varieties of native rats and bats and the marine forms, the dugong and the seals. Imported animals, the rabbit, fox and hare, have not been overlooked, their economic position and effect on native species being fully discussed.

The illustrations, the work of Mr. Neville Cayley, comprise twenty-five plates depicting some 175 species in natural colours. The artist has done his part well, and while some detail has been sacrificed in reproduction, the plates have been artistically printed and faithfully supplement the textual descriptions. Some instructions for amateur collectors and a copious index complete a work which it is hoped will quicken an interest in our unique furred animals and impress on all Australians the urgent necessity for the protection and conservation of existing species.

[1] "Furred Animals of Australia", by E. Troughton, F.R.Z.S., C.M.Z.S.; with 25 plates in colour by N. W. Cayley, F.R.Z.S.; 1941. Sydney: Angus and Robertson Limited. Royal 8vo, pp. 401. Price: 14s. 6d. net.

Notes on Books, Current Journals and New Appliances.

A POCKET MEDICAL DICTIONARY.

THE "Pocket Medical Dictionary" compiled by Sister Lois Oakes has reached its fifth edition.[1] This is a useful little volume and is suitable for nurses, massage students and medical students in their earlier years. Previous editions have been mentioned in these columns, and the appearance of a fifth edition shows that there is a public demand for a publication of this kind. In this edition the author has included an appendix which will be useful to nurses and "voluntary aid" workers. In this appendix are sections on trays prepared for nursing techniques, first aid, gas warfare precautions, some poisons and their antidotes, diseases designated by their discoverers' names, methods of working out dosage, average normal physiological standards, urine testing, examination of fæces, examination of blood, and dietary tables. The appendix will enhance the value of the book.

FIRST AID PHOTOGRAPHY.

THOSE who are interested in first aid, and there are many such today, will find useful a small book by Dr. L. S. Michaelis.[2] This slim volume consists almost entirely of photographs (taken by Vera Elkan) depicting the use of the triangular bandage. With these illustrations alone the reader may learn how to use the bandage. There are short passages dealing with the broken hip bone and spine, unconsciousness and shock. In regard to the first of these the advice is sound—to send for expert help and to see that no additional damage is done by moving the patient; "a trained stretcher party will see that the patient is safely transported to hospital". Of its kind this is a useful little book.

[1] "A Pocket Medical Dictionary", compiled by L. Oakes, S.R.N., D.N., assisted by T. B. Davie, B.A., M.D., F.R.C.P.; Fifth Edition; 1941. Edinburgh: E. and S. Livingstone. Crown 16mo, pp. 438, with illustrations. Price: 3s. 6d. net.

[2] "First Aid Through Photographs", by L. S. Michaelis, M.D.; photographs by V. Elkan; 1941. London: Longmans, Green and Company. Crown 8vo, pp. 64, with illustrations. Price: 2s. net.

The Medical Journal of Australia

SATURDAY, MAY 23, 1942.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

PERITONEOSCOPY.

EXAMINATION of the peritoneal cavity by what is known as peritoneoscopy, though fully described and recognized many years ago as a possible diagnostic procedure, has not been widely practised. There are possibly several reasons for this neglect. It may be regarded as a procedure difficult to perform or as fraught with unnecessary risk; it may on the other hand be thought that the information given by it can be obtained with almost equal safety but with less possibility of error by exploratory laparotomy. The surgical critic might, in the circumstances, be justified in the view that peritoneoscopy was more of a surgical refinement than a clinical necessity. On the other hand he might not. The question may be discussed, particularly in view of recent articles that have appeared and have been based on personal experience.

One prominent fact in the history of the procedure is that the technique adopted today is practically the same as that used by its originator in 1901. In that year George Kelling read a paper on September 23 at a meeting in Hamburg and the report was published in the *Münchener medizinische Wochenschrift* in the following January. These dates are given by J. C. Ruddock in one of the most complete articles written on the subject and available in this country.[1] Kelling demonstrated the procedure on a living dog by inflating the abdominal cavity with air and examining the contents with a Nitze cystoscope. Kelling's second report appeared in 1910 when he described his use of the method in the examination of human subjects. Richard T. Shackelford in a paper read last October at a meeting of the Surgical Investigative Society of the South at Vanderbilt University, tells us that in 1901 Ott, a Russian, working independently of Kelling, described his method of peritoneoscopy.[2] Ott inserted a speculum through a small incision in the abdominal or vaginal wall and by means of a head mirror inspected the peritoneal cavity and its contents. Of the two original methods it is obvious that Kelling's was likely to be much the more effective. In 1910 H. C. Jacobaeus, of Stockholm, published a paper on a method which is stated[3] to have been developed independently by him. The trocar tube used by him had a trap-valve which closed when the stylet was withdrawn, preventing the escape of air from the body cavity. In 1911 Jacobaeus was able with his endoscope to distinguish between cirrhosis of the liver, *lues*, metastatic tumours and tuberculous peritonitis. In 1910 B. M. Bernheim, of the Johns Hopkins University, also working independently, used an ordinary proctoscope,[4] the distal end of which was blunted by the attachment of a metal collar; he provided illumination by means of an electric light. He described his method of examining the stomach and also made an incision in the stomach wall so that he might insert the endoscope and examine the gastric mucosa. Cystoscopes were used for peritoneoscopy for many years and important work was done, as may be seen by reference to the article by Nadeau and Kampmeier, already mentioned.[3] Considerable impetus was given to peritoneoscopy by Ruddock. Shackelford states that the present interest in the subject has been aroused chiefly by the "convincing work" of Ruddock. The Ruddock peritoneoscope has been described by Ruddock himself;[1] it comprises not only all that is needed for peritoneoscopy, but also a biopsy forceps for the removal of tissue for subsequent examination.

Every investigator who has written on peritoneoscopy has remarked on the simplicity of the technique. No preparation is necessary before the examination other than the administration of a quarter of a grain of morphine about twenty minutes before a puncture is to be made. "Novocain" is injected at the site of the proposed puncture. A small stab incision is made in the skin and the point of the scalpel is carried down until a nick is made in the fascial layers. A pneumoperitoneum needle is inserted and the abdomen is distended with air. The peritoneoscope is then inserted. It will be obvious that the peritoneal surface of many of the abdominal organs will be visible if this instrument is skilfully used; the patient may be tilted into any position that will make visibility easier. Thus the Trendelenburg position or Fowler's position may be used or the patient may be turned on one or other side. Such areas as the posterior aspect of the stomach and structures in the neighbourhood of the common bile duct and the foramen of Winslow will not be visible. The lesions that can be discovered are described by several authors. Ruddock[1] reported the results of 500 examinations. The conditions seen and diagnosed by him included: general carcinomatosis of the peritoneal cavity, carcinomatous nodules in the liver, carcinoma of the gall-bladder, melanotic sarcoma of the liver with metastases of the peritoneum, hæmangioma of the liver, hydrops of the gall-bladder, lymphoma of the stomach, carcinoma of the stomach, fibroid tumour of the uterus, normal pregnancy, ruptured ectopic pregnancy, ovarian cyst, ruptured chocolate cyst of the ovary and many other conditions as

[1] J. C. Ruddock, "Peritoneoscopy", *Surgery, Gynecology and Obstetrics*, Volume LXV, 1937, page 623.

[2] R. T. Shackelford, "Peritoneoscopy", *Surgery*, November, 1941, page 742.

[3] O. E. Nadeau and O. F. Kampmeier, "Endoscopy of the Abdomen; Abdominoscopy", *Surgery, Gynecology and Obstetrics*, Volume XLI, 1925, page 259.

[4] B. M. Bernheim, "Organoscopy", *Annals of Surgery*, Volume LIII, 1911, page 764.

obscure as those mentioned, but too numerous to quote in detail. Doubtless some of the diagnoses were made after the taking of a specimen for biopsy, but even so it is clear that both experience and judgement are needed if complete information is to be obtained from peritoneoscopy. C. B. Olim has recently reviewed a series of 150 cases in which he used peritoneoscopy.[5] He lays emphasis on its value in the differentiation of cirrhosis and malignant disease of the liver. He stresses its importance in the diagnosis of tuberculous peritonitis and insists, as other writers have done, that peritoneoscopy is particularly valuable in determining whether cancer of the stomach is operable or not. Three accidents occurred in this series. In two cases the bowel was perforated with no untoward results; in the third a small cholangitic abscess was perforated during the taking of a biopsy, many metastases were present, and as nothing further was done, the patient died seven days later. Shackelford in his article reports 81 cases in which he has used peritoneoscopy and others from the literature bringing the total up to 2,000. In the 2,000 cases the intestine was accidentally perforated eleven times and in none of these did any serious complication arise. Of the two deaths in the 2,000 cases, one was that of a moribund patient and the other occurred after the taking of a biopsy specimen from the liver before the days when a method for coagulating such a wound had been devised.

From the foregoing we may conclude that peritoneoscopy has a definite sphere of usefulness and that it is a safe procedure. The contraindications to its use will at once be apparent. In the presence of acute inflammatory disease the insertion of a peritoneoscope might spread the infection. While known intraperitoneal adhesions are not necessarily a contraindication, care would need to be exercised in the selection of cases for the procedure—and this apart from the fact that adhesions would interfere considerably with vision. Moreover, as Shakelford points out, most of the accidents have been perforations of the intestine. Shakelford also includes abdominal distension as a contraindication on account of the thinning of the intestinal wall that would accompany it, making perforation more likely to occur.

In a general conclusion it can be stated that a procedure which will allow diseased organs to be seen should find its place in the clinician's diagnostic equipment. Peritoneoscopy, however, is not just "another method"; it is a special method which should be used for a definite purpose, for example, to settle a point in differential diagnosis, to confirm a suspected diagnosis or to identify and localize a tumour. As Rudduck remarks, it "should not be expected to accomplish more than the purpose for which it is done". It will thus be clear that, to quote Rudduck again, peritoneoscopy does not and will not replace laparotomy. It will, however, often make laparotomy unnecessary; in witness of this statement are twenty-seven cases in Shakelford's series of eighty-one. So far the use of peritoneoscopy has not to our knowledge been reported in this country. It is likely that the reawakening of interest in its use on the other side of the world may cause a reawakening here, for our original question has been answered—peritoneoscopy is not merely a surgical refinement; it will often be a clinical necessity. One earnest request we have for clinicians who use the method—that they will not mutilate the English language by saying that they have "peritoneoscoped" their patients. If the history of other diagnostic procedures counts for anything, such a crime is almost certain to occur.

[5] C. B. Olim: "Peritoneoscopy", *Surgery*, September, 1941.

Current Comment.

THE VALUE OF BISMUTH CARBONATE IN GASTRIC DISEASE.

BISMUTH SALTS, especially the carbonate and subnitrate, have maintained a very constant popularity in prescriptions designed for the relief or cure of gastric disorders, notwithstanding questions of expense, insolubility and effects upon the colour and odour of the excreta. Besides acting as an antacid and astringent, bismuth is supposed to arrange itself in a protective film over an ulcer or inflamed mucosa. The effectiveness of bismuth in these directions is comparatively easy to investigate by a series of test meals and X-ray photographs. In 1929 Hurst concluded that "half an ounce of bismuth oxycarbonate, taken in suspension on an empty stomach, does not, as a rule, adhere to the ulcer crater of even a large gastric or duodenal ulcer". Freezer, Gibson and Matthews, following *in vitro* tests for the effectiveness of bismuth as an antacid, declared that bismuth was virtually useless, and Clark showed in 1940 that to neutralize the five grammes of pure hydrochloric acid, normally secreted by a healthy individual in twenty four hours, no less than 136 grammes (2,000 grains) of bismuth carbonate would be required.

These results have been confirmed by S. Alstead, of Glasgow.[1] He found that the addition of an excess of bismuth carbonate to gastric juice *in vitro* produced only very slight changes in acidity, for example, a pH of 2 became a pH of 2·1. The buffering effect of mucoprotein may have assisted in producing such a feeble result in this instance. Alstead then proceeded to perform a series of test meal examinations on normal persons before and after bismuth administration. Conscious of the variability of gastric acidity in healthy men from day to day, he realized that satisfactory controls would be impossible, and so took as a starting point the first three readings of a series prior to the administration of the drug in half-drachm doses. It was found that the acidity was unchanged, or even continued to increase in seven of nine individuals. The effect of the administration of a single large dose of bismuth carbonate was studied. A medical student was induced to take a dose of two hundred and ten grains. The pH of the gastric contents rose from 1·67 to 2·16 for half an hour only. The bismuth when recovered had formed itself into curdy masses with the gastric mucus.

Bismuth carbonate can act as an astringent only when in solution. Alstead could detect only one part in 160,000 of bismuth in a filtrate from a mixture of 0·3% hydrochloric acid and an excess of bismuth carbonate. The filtrate had no coagulative or opacifying effect upon egg albumen. Bismuth is equally insoluble in lactic acid, one of the chief organic acids found in stomach contents. Equally no evidence of solubility in gastric juice could be detected. The X-ray screen was next employed to test the property of bismuth to coat a peptic ulcer. The bismuth merely trickled into a pool in the lowest part of the greater curvature, and remained there for over an hour, showing no tendency to distribute itself over the gastric lining or to enter an ulcer of the lesser curvature. Manual attempts even after the giving of ninety grains of the drug were just as unsuccessful. When there was food in the stomach at the time of administration of the drug, the suspension of bismuth carbonate was seen to follow the same course, but the suspension was soon broken up by the food masses and the bulk of the salt accumulated about the middle of the stomach. In further clinical tests for therapeutic efficiency, Alstead tried the effect of giving a series of coloured powders, whose composition was unknown to the

[1] *The Lancet*, October 11, 1941.

patients concerned; one of the powders contained bismuth carbonate, another lactose and another dried milk. The patients all suffered from pain, thought to arise in the stomach or duodenum. The patient was directed to take the powders in any order, and to decide in the course of a week or ten days which, if any, of them gave relief from pain. He was to take them only if in pain, and then as often as he liked. In sixteen cases there was objective radiologica levidence of disease, in five there was none. Only six of these patients appeared to obtain relief from bismuth carbonate; four were also relieved by the lactose or dried milk. All were subsequently relieved to a much greater degree by six-grain powders of magnesium oxide. Statistical analyses of the results proved that no differences existed between the degree of response to the three powders.

These investigations show bismuth carbonate in a bad light as regards any therapeutic effect in protecting the gastric mucosa. It has practically no astringent or antacid effects, especially when compared with powerful antacids such as magnesium and aluminium salts. Its widespread use is therefore to be discouraged. It is significant that in this country the drug is rarely prescribed alone, and benefit from bismuth-containing mixtures and powders must be ascribed to other ingredients. Its disadvantages, such as blackening of the stools which may disguise melena, and the occasional poisoning from the reduction of bismuth subnitrate to nitrites in the bowel, are further good reasons for its abandonment. Long usage, however, has formed habits in prescribing, which doctors have great difficulty in changing, as the Medical Equipment Control Committee has discovered. Bismuth is not cheap, and in these hard days prescribers will obtain better results and more gratitude by ordering antacids for which there is more pharmacological sanction.

SPONTANEOUS HÆMAGGLUTINATION.

SPONTANEOUS HÆMAGGLUTINATION or autohæmagglutination denotes a clumping of red cells when mixed with serum from the same person at a temperature of 0° to 5° C. In rare cases such clumping will also occur at room temperature. The affected subjects are usually in normal health, and the discovery of this remarkable property of their blood is often accidental. Severe anæmias, hæmolytic and otherwise, sometimes provide further examples. H. J. Parish and R. G. Macfarlane have recently told of a male laboratory assistant in good health, in whom the condition manifested itself by chance when his serum, which belonged to Group O, agglutinated not only serum of Groups A and B, but also test serum of Group O in all of 15 trials.[1] Cells of Group AB and unwashed cells of the patient himself were also agglutinated at room temperature, but not when the mixture had been warmed to 37° C. After the washing and suspension of his cells in saline solution, however, they were agglutinated by his own citrated plasma, but not by his serum or that of other normal people. Agglutination of his own washed cells in citrate saline by his own serum was inhibited by the addition of calcium chloride. The outstanding feature of this case is therefore that the patient's serum would not agglutinate his own cells washed in saline solution, but only if washed in citrate or oxalate. Agglutination was thus potentiated by something present in plasma but not in serum, which must be citrate or oxalate, acting directly or by the inactivation of calcium.

The condition in this instance did not appear to be familial or to be associated with anæmia or liver dysfunction. The patient's history revealed some allergic attacks, nothing more. It is not unlikely that his health would suffer were he subjected to sudden chilling, since the presence of calcium *in vivo* would prevent the reactions. The practical significance of autohæmagglutination is that on routine blood grouping autoagglutinators of Groups A or AB or B may be classified as belonging to Group O. Retesting at 37° C. would eliminate this difficulty, since agglutination of A and B corpuscles at room temperature, but not at 37° C., would designate the subject as one of Group AB. Again, unwashed cells of an autoagglutinator may be agglutinated by the trace of his own plasma in the diagnostic serum, and so falsely indicate him as belonging to Group AB, instead of one of the others. Washing the cells or heating to 40° C. would abolish the non-specific agglutination.

T. H. C. Beanians and W. R. Feasby[1] contribute two interesting examples of the association of spontaneous cold hæmagglutination with Raynaud's syndrome. The vasospastic attacks were typical. Both patients were otherwise healthy women, aged fifty-two and sixty-five years respectively. Both patients differed from the patient reported by Parish and Macfarlane in that it was discovered that both serum and plasma, whether heparinized, citrated or oxalated, had the power of agglutinating both washed homologous red cells and the red cells of all groups, including O, in high titre. The cells dispersed again when the temperature was raised to 27° C., but reagglutinated on cooling. The authors are inclined to think that such an unusual relationship may throw some light upon the causation of Raynaud's disease, in addition to Lewis's hypothesis of abnormal susceptibility of the digital arteries to cold. Possibly there is a double hypersensitivity to cold, both in the digital arteries and in the blood. Plugging of the arteries with agglutinated cells would hardly be responsible, as the reaction is unlikely to occur *in vivo*, and other small arteries, such as the lung and brain, could be expected to show the effect of multiple obstruction. The main danger associated with the condition is that already referred to, namely, false blood grouping. Anomalous results in routine grouping should lead either to abandonment of the unclassifiable donor or repetition of the testing at body temperature.

[1] *The Lancet*, October 25, 1941.

NATIONAL EMERGENCY SERVICES OF NEW SOUTH WALES.

IN the issue of May 17, 1941, attention was directed in these pages to a brochure entitled "First Aid Services" compiled by the Medical Services Committee of the National Emergency Services of New South Wales. Among the alterations to the standing orders contained in this brochure are the following.

The general tenor of the standing orders has been altered so that medical commandants may or may not be attached to either first aid posts or stretcher parties at the discretion of the area medical commandant. This alteration was necessary in view of the increasing shortage of medical practitioners available for national emergency services. Reference has now been included to the fact that the liaison medical officer shall be a member of the medical services committee. This provision merely confirms a position which has always existed. The establishment strength of first aid posts has been altered, the posts now being classified in three groups: full-size, half-size and quarter-size. In a full-size post the personnel has been reduced from fifty-seven (fourteen males and forty-three females), to thirty-eight (eight males and thirty females). Provision has also been made for the establishment of mobile doctor (light surgical) units. These units have been established in respect of the vulnerable areas only. The medical commandant in control of stretcher parties is not responsible to the area medical commandant for the transport of the party. The responsibility to the chief warden for the general care of transport has been removed from the senior officer of the stretcher party to the driver clerk. In keeping with the general change of tenor in the standing orders, the medical commandant in charge of a stretcher party may proceed to the site of casualties if he deems it necessary or is instructed by the area medical commandant. In regard to the evacuation of the post it is now provided that such evacuation shall be carried out in consultation with the chief warden and the area medical commandant. Previously this matter was the sole responsibility of the chief warden.

[1] *Ibidem.*

Abstracts from Medical Literature.

BACTERIOLOGY AND IMMUNOLOGY.

Natural History of Experimental Poliomyelitis Infection.

ALBERT B. SABIN AND ROBERT WARD (*The Journal of Experimental Medicine*, December, 1941) have studied the elimination of virus by living poliomyelitis patients. Nasal secretions were collected over a period in 22 cases, and in no case was virus found in the secretion. Nine of the same 22 patients yielded readily demonstrable virus in stool or enema returns. Large amounts of urine from paralysed patients were concentrated and tested, but negative results were obtained. The positive findings were most frequently obtained from children under eight years of age and from patients who ultimately died. For practical purposes the authors believe that secretions from the mouth and nose of human paralytic poliomyelitis patients are free from infective virus, and they found no support for the hypothesis that virus in the stool originates from swallowed nasal secretion or saliva.

ALBERT B. SABIN AND ROBERT WARD (*ibidem*, January, 1942) have continued their studies by investigating the centrifugal spread and elimination of virus in monkeys inoculated in the sciatic nerve. Eight rhesus monkeys were so infected and their nasal secretions were collected daily during the course of the illness, which usually lasted for about seven days; and after death tissues from various sites were tested for the presence of virus in an attempt to determine the directions of spread. The nasal secretions did not yield virus in a single instance, while the whole eight spinal cords did. Examination of tonsillar, pharyngeal and other lymphatic tissue failed to reveal the presence of virus, and no virus was found in small intestine and sympathetic ganglia in both thorax and abdomen. Histological preparations showed that when lesions were demonstrable, virus was easily recoverable, but no lesion could be found when the virus was not recovered. The absence of lesions from the wall of the small intestine does not conflict with its presence in animals inoculated by intranasal instillation and feeding, for in the authors' experiments the virus was put directly into its most suitable tissue. The authors fed a different strain of virus to other monkeys and had no difficulty in isolating virus from the wall and contents of the small intestine.

Virus of Poliomyelitis in Sewage.

JAMES D. TRASK AND JOHN R. PAUL (*The Journal of Experimental Medicine*, January, 1942) have completed 36 monthly tests for the virus of poliomyelitis in sewage collected in New York and Connecticut. Four litres of material were collected and injected into rhesus monkeys. In the early part of the work the sewage was treated with ether; later it was concentrated by Gard's method, and the amount of inoculum chosen was 20 cubic centimetres, injected intraperitoneally. One specimen produced typical poliomyelitis, with fever and paralysis after nine days; the monkey was prostrate after eleven days. Histological lesions were typical and passage of glycerinated cord produced the disease in other monkeys. It was noted that in the month of successful isolation there were 25 cases of poliomyelitis in the city and four in houses situated on the sewer line. An incidental finding during the early part of the study was that of tubercle bacilli. No less than seven monkeys developed an unusual form of peritoneal tuberculosis without involvement of the lungs, and pathogenicity tests in one instance established the organism as a human strain. After Gard's concentration method was introduced this complicating factor in the search for poliomyelitis disappeared. The authors discuss the significance of their finding of virus during an epidemic and the use of the concentration method. They also suggest the use of the monkey for the detection of tubercle bacilli.

Adhesiveness of Blood Platelets.

HELEN PAYLING WRIGHT (*The Journal of Pathology and Bacteriology*, September, 1941) has devised a quantitative method of studying the adhesiveness of blood platelets in normal subjects with varying concentrations of anticoagulants. A special tube was devised which could be treated with paraffin, closed by glass coverslips, and rotated on a stand at a fixed rate. Portions of blood were removed every twenty minutes and counts were made and compared with controls and with one another. The anticoagulants used were heparin, sodium oxalate, and types of chlorazol dye, each being mixed in three strengths. The tubes were tested over 80 minutes and then the coverslips were removed, dried and stained by Leishman's method. A steady fall in the count was found with all three anticoagulants, the rate being slower when the concentration was higher. When the minimal amount was used the final count was only 22% to 28% of the first one. With high concentrations oxalate showed the best figures, heparin the lowest. The coverglasses were found to be obscured by masses of platelets in many layers and quite uncountable numbers. The results indicated that the theory that platelets "disintegrate" in drawn blood is not true. The author points out that if this were so large amounts of thrombokinase would be liberated, and as they accumulated, minimal amounts of anticoagulant would not suffice to prevent clotting; and in practice this does not happen. The source of the adhesiveness of the platelets is under investigation, particularly the suggestion that it is due to the formation on their surface of a thin film of fibrin.

Coliform Bacilli in Distilled Water.

J. W. BIGGER AND J. HAVELOCK NELSON (*The Journal of Pathology and Bacteriology*, September, 1941) have investigated certain conflicting results about the growth of coliform bacilli in a variety of natural and sand-filtered waters. Many criticisms had been levelled at the methods, and the inclusion of rubber tubing in the apparatus was thought to affect the occurrence of growth in filtered waters. It was established that certain samples of water did support growth after filtration, though not in their natural state; but the discussion on rubber tubing brought out a much more important fact. A series of experiments with new and carefully cleaned tubing demonstrated that the presence of talc in the new sample was the essential factor which changed an inert water into one which would support growth. Talc is a hydrated magnesium silicate and does not itself contain the necessary nitrogen, so the authors set about investigating its mode of action. The tap-water without talc did not contain the necessary substances, the amount carried over in the test inoculum from a broth culture would be in a dilution of one part in a million, which would not suffice, so experiments were designed to determine whether the talc enabled the atmospheric gases to be absorbed in sufficient quantities. By increasing the amount of water in the test flask and thus reducing the air above it, a point could be found at which growth did not occur, in spite of the presence of talc. When the air in the test flask was replaced by a variety of other pure gases growth did not occur. The suggestion was made that gases present in small amount in the air were probably carbon dioxide and ammonia. Dilutions of ammonium carbonate were then added to the water being tested, and growth was frequently recorded. Many other insoluble substances were found to have a similar action, enabling gases to be absorbed from the air in sufficient amount to permit growth to occur in the water. The addition of talc to tap-water which had been heated, invariably converted it to a nutrient medium even when the raw tap-water with talc was not. This was believed to be due to heat-labile inhibitory substances in the water.

Staphylococcus Bacteriophage.

K. B. EISENBERG MERLING (*The Journal of Pathology and Bacteriology*, November, 1941) has made microscopic observations on the bacteriophage of the staphylococcus, studying individual cells under the ultra-microscope on a warm stage and taking measurements and photographs. Lysis began almost immediately after the phage was added to the bacterial emulsion, and was usually complete in two hours. Particles of phage appeared to adhere to the edge of the coccus, which became swollen, and the particles became free in the interior and moved about. Then the coccus shrank, slowly disintegrated and liberated from two to four particles. The shadowy coccus skeleton might persist for a considerable period of time before breaking up. Cocci which resisted the action of the phage developed secondary colonies of resistant cocci if observed for a sufficiently long period. The average size of the staphylococcus was 1·0μ; it swelled to 1·5μ, whilst the phage particles averaged 0·06μ.

HYGIENE.

Family Contacts with Tuberculous Lesions.

H. J. ANDERSON (*Canadian Public Health Journal*, December, 1941) has made a study of 345 family contacts in Saskatchewan, 308 of whom were exposed to open tuberculosis infections. The contacts comprised 166 males and 179 females. During the first year of exposure 34% of the lesions were found; over half (57%) were found in the first two years and 66% in the first three; 92% were found in the first seven years after exposure. An average period of almost exactly three years is given for the period from exposure to the discovery

of the disease. The study deals with the interval between the breaking of the contact and the discovery of the lesions. On this basis 62% were found during the first year, 14·6% in the second and 7·5% in the third (84% in the first three years); the average was 1·54 years. The examination of positively reacting school children is relatively unprofitable, only 0·5% of the diseased being found. A similar small proportion of positively reacting contacts develop disease seven years or more after the contact has been broken. Examination of contacts in the fifth and seventh years after contact is broken is worth while, but not later. The evidence is against the old belief that childhood infection lies dormant for years, to flare up in early adult life. It does not contribute to any great degree to the high incidence of infection at twenty to twenty-four years. Nearly all these infections developed within five years of contact. In the first five years of life 65% were family contacts, at twenty to twenty-four years of age only 21%. A negative history of family contact should not influence a diagnosis of early adult tuberculosis. Mortality is largely decided by the stage at which the disease is first found, and is especially high in the fifteen to nineteen age group. The rise at fifteen to nineteen years is due largely to the increase in females. "This is the unsolved riddle of this generation and may be occupational." Many young women at this age are "cleaners" in homes and institutions and nurses in homes and hospitals; both occupations mean increased exposure to the infection. Study of these females aged fifteen to twenty-four years is urgently needed in order to find some useful protection for them. Annual examination of contacts after removal from contact should be repeated for three years with tests in the fifth and seventh years. The programme of work should be checked from time to time and readjusted when necessary.

Pediculosis: A New Treatment.

L. P. MACHAFFIE (*Canadian Public Health Journal*, December, 1941) describes what he calls a new treatment for pediculosis. He states that pediculosis uses up the time of the school nurse and causes school absence. It chiefly affects the heads of poorer and unclean children from groups of insanitary homes. Mothers and children just before and after the school age are the main sources of infestation. An adolescent with a permanent wave is worst of all. Everyone in the house must be cleaned up at the same time, otherwise reinfection easily occurs. Caps and clothing count for little. Chronic offenders may accept the state of affairs and become aggressive and non-cooperative. The author puts forward as a quick, cheap, non-poisonous and efficient remedy, for both nits and lice, the use of lethane, 15%, in pure deodorized kerosene. One treatment is enough. The mixture is cheap. Everyone at home should have a supply. The hairs are soaked (the patient keeps his eyes shut). Excess is removed. The head is not covered with a towel, but the head is fine-combed next day. Lethane is n butyl-carbitol-thiocyanate.

Phenothiazine.

R. J. SCHNITZER, C. SIEBENMANN AND H. D. BETT (*Canadian Public Health Journal*, January, 1942) have made chemical and toxicological studies of phenothiazine. Phenothiazine, well known as a veterinary anthelmintic, has recently been used in pinworm infestations in human beings. As in animals, phenothiazine is of low toxicity in man. In spite of absence of chlorine, of keto or of quinine or lactone structure, it is very active. It is also fungicidal. The rapid elimination, 50% in fæces and most of the rest in the urine, partly explains its safety. The urine in which the drug is excreted turns red after exposure to air (thional). In dogs phenothiazine may give rise to temporary anæmia and anæmia may be caused in man by large doses, such as twenty to twenty-five grammes.

The Responsibility for Following Up Venereal Disease Contacts.

W. H. AVERY (*Canadian Public Health Journal*, January, 1942), writing on the responsibility for following up venereal disease contacts, states that every physician should in every case find out the source of infection. This is a delicate problem and may require more time than he can give. The author emphasizes the value of also following up the patient till he is non-infective, and he supports the use of the drip treatment—a five-day treatment with arsenoxide ("Mapharsen"). At least 85% of patients are cured with a total dose of 1·2 grammes; the remainder may need a second course three months later. In this way infective contacts are prevented. By law prostitutes may be quarantined till free from infection and until they have been adequately treated; this prevents neurosyphilis. In Ontario it is now a crime for any patient not to take treatment. In jail effective treatment is given, but the follow-up after the patients leave jail has failed. In British Columbia an intensive campaign has succeeded during the past three years in the promotion of a widespread discussion of venereal disease problems.

Multiple Sclerosis in Baltimore City.

L. C. KOLB, O. R. LANGWORTHY AND MARIE CAKRTOVA (*American Journal of Hygiene*, January, 1941) state that all cases of multiple sclerosis in Baltimore hospital patients for eleven years, 1929-1939, numbered 246. The 199 multiple sclerosis cases occurring at Johns Hopkins Hospital were studied. Males were more often affected, and between twenty-one and forty years of age; 80% were found with limits of twelve and fifty-nine years. Of the patients, 66% were married, but no conjugal cases were found. Male impotency is common with later sex maladjustment. No significant association was noted with occupation or with rural life. At any moment of time 10 to 20 cases exist among every 100,000 members of the community. In number during the eleven years they exceeded the cases of nerve syphilis by 50%, and were double the number of cases of hypertension with localized signs and of epilepsy. No special racial incidence existed. It is probable that patients come from stock liable to develop nervous disorders. Pregnancy makes matters worse. Patients do not tolerate surgery well. In the 16 fatal cases the patients averaged a life expectation of nearly eight years after onset, but the mortality is higher than the average. Remissions of symptoms took place in 41 cases, but seldom permitted a man to get a job. Numbness of the hands was the first symptom as a rule, and unsteady gait next. Headache, vomiting, difficult speech, depression were less common. Other patients complained of dimness of vision or of cross-eyes and double vision. A few came because of urgency or frequency or lack of control over urination. One or two came in with a diagnosis of cerebral tumour. As a cause of disability, especially in the early adult productive period, multiple sclerosis exceeds poliomyelitis and equals post-encephalitis. Causation is complex. Some unknown demyelinizing factor seems to be involved.

Acute Anterior Poliomyelitis in Alberta in 1941.

A. C. MCGUGAN (*Canadian Public Health Journal*, November, 1941) reports an epidemic of 152 cases of poliomyelitis in two months, August and September (early autumn). Two cases proved to be encephalomyelitis (western equine strain). The ages five to fourteen years showed the highest incidence (39%), and 44% of infections occurred in persons over fifteen years; 55% of patients were males and 45% females. In 79 cases followed up three patients died, 31 show residual paralysis (three are in respirators) and 35 have been free from paralysis. Frontal headache was constant and severe, and in most cases gastro-intestinal symptoms (nausea and vomiting) were marked. The Alberta law provides orthopædic care and hospital treatment for all suffering from residual paralysis. Special education and occupational assistance are given free of cost.

Trichinosis in Toronto.

E. KUITUNEN-EKBAUM (*Canadian Public Health Journal*, November, 1941) discusses the incidence of trichinosis in man in Toronto. During the years 1939 and 1940, 420 diaphragms were examined by the Baermann digestive method and direct microscopic examination. Seven were found infected by *Trichinella spiralis*. Of 300 adults, 133 females and 167 males, three females from Canada and three males from England gave positive findings. Among 51 females and 69 males, only one infection was found, and that in a seven-months fœtus. The incidence in Canada is therefore low.

The Paroxysms Resulting from Induced Infections of Plasmodium Vivax.

G. R. COATNEY AND M. D. YOUNG (*The American Journal of Hygiene*, January, 1942) have studied induced infections with *Plasmodium vivax* in 21 neurosyphilitics with 338 paroxysms. Chills occurred in nearly 60% of cases, but 41% of patients (76% in Negroes) had no shivering fit. The chills lasted five to seventy-five minutes, with an average of thirty-nine minutes. As a rule the temperature had already reached 100·6° F. and rose during the chill 2·3° to 103° F. The greatest rise was 6° in sixty minutes. On the average the paroxysms lasted for ten hours (4 to 44), and the peak temperature reached was about 104·8° F., taking about four hours to reach the peak of fever and six and a quarter hours to return to normal. In the chill-accompanied fever the time-table was one hour from fever rise to chill; length of chill thirty-nine minutes, end of chill to fever peak one and a half hours, and thence to normal six hours, or about nine and a quarter hours in all. The fevers without chill took longer to reach the peak, five hours, and rather longer to reach normal, six and a half hours, or eleven and a half

hours in all. The peak, however, was not quite so high. Chills and fever may thus be a misleading description, especially in Negroes. The chill does seem to be linked up with a smarter rise and high temperature peak.

Epidemiological Features of Leptospiral Jaundice in Baltimore.

T. G. WARD AND T. B. TURNER (*The American Journal of Hygiene*, January, 1942) state that in twelve months, 1940-1941, eight cases of acute leptospiral jaundice were recognized in Baltimore, though in the previous decade only two or three had been noted. Agglutination tests were applied to groups of persons associated by occupation. In eight poultry dressers' shops 17% of 75 employees gave positive results to tests. In three meat-packing plants 6% of 48 men gave reactions. The positive reactions came from premises dirty, damp and rat-infested. Water was used in the processing. Controls from a candy factory and among university students failed to give reactions. In 294 specimens of serum submitted for serological tests for syphilis nine gave positive reactions to tests for leptospiral jaundice, but none of the 41 specimens found positive for syphilis reacted. Of the group of hospital patients tested, 13 gave positive reactions in addition to the reactions in the eight cases. Evidently the disease is more common in Baltimore than the records would seem to show. In a well used for drinking purposes by three of the patients virulent *Leptospira hæmorrhagica* was found. Rats infested the well head, which was unprotected. Rat contact with food patients had eaten recently was noted in other cases.

Benzol and Aplastic Anæmia.

LEO M. MEYER AND VICTOR GINSBERG (*The Journal of Industrial Hygiene and Toxicology*) briefly review the literature and report a case of aplastic anæmia in which the disease followed exposure to benzene fumes after an interval of ten years; the patient had worked in a rubber factory for one year. The illness was characterized by fatigability of eighteen months' duration, followed by a period of four weeks prior to the patient's admission to hospital in which he complained of weakness, numbness of the hands and feet, vertigo, nervousness, œdema of the lower extremities, precordial pain relieved by rest, nausea and vomiting. Death occurred fourteen days after his admission to hospital. Before his death sternal puncture was unsuccessfully attempted three times; at autopsy the bone marrow of the ribs, sternum and vertebræ was unusually dry, and little substance could be expressed from any of these bones. In marrow from some areas the hypoplasia was moderate and distinct evidence of hæmatopoiesis was present; in other areas the aplasia was extreme and there was a complete absence of any blood-forming elements. The authors point out that the relationship of benzene (benzol) to aplastic anæmia has been known since 1897. Benzene is a coal tar derivative used largely in rubber and canning factories as a solvent, in fuels and in the manufacture of dyes and drugs. Poisoning may be acute or chronic. The acute process results from inhalation of concentrated vapours in closed areas; death from asphyxia results in a few minutes and is central in origin. Chronic benzene poisoning can occur (i) by prolonged inhalation of solvents containing benzene, (ii) by absorption from the skin, and (iii) by ingestion, as in the treatment of leuchæmia. There appears to be little relationship between time and duration of exposure and the initial appearance of symptoms; one case is reported as having occurred thirty-five years after exposure. Rhoads has pointed out that in obscure refractory anæmia it is important to obtain a careful history in order to discover the causative factor. He has suggested, in addition to the frequent occurrence of this disease in persons who have been exposed to benzene, the following possible agents in the ætiology of aplastic anæmia: endocrine dysfunction, allergy, infection, exposure to radiation, toxæmia and an "abnormality in the handling of cyclic compounds of endogenuos origin".

MEDICINE.

The Significance of Target Cells in Anæmia.

MILTON G. BOHROD (*The American Journal of the Medical Sciences*, December, 1941) inclines to the view that the target cell is a newly formed cell produced by the bone marrow in response to blood loss of whatever cause. He points out that the appearance of target cells in the stained blood film, far from being an unusual event, is very common. Such cells can be found in small numbers early in the majority of cases of anæmia; rare examples may even be seen in apparently "normal" smears. In the more chronic anæmias the number is variable; target cells may make up 1% to 10% of the erythrocytes. The presence of target cells in stained smears is transitory in acute anæmia; often they disappear before a significant rise in the number of erythrocytes has occurred, and in this way they resemble reticulocytes. They usually first appear on the third or fourth day after a hæmorrhage, though they may appear earlier. A transitory decreased fragility of the erythrocytes follows the appearance of target cells. Target cells are highly resistant to hypotonic saline solutions *in vitro*; the author has also found them resistant to acetic acid. No evidence has yet been presented to support the contention that the target cell, hyperesistant *in vitro*, is *in vivo* more friable than the usual erythrocyte, or that the destruction of such cells leads to Cooley's anæmia. In this regard it is simpler to consider the target cell in this disease, as in sickle-cell anæmia and in many other forms of anæmia, as the response to the blood destruction rather than the cause of it. The author considers that the question of the normal shape of the circulating erythrocyte should be reexamined. He thinks it possible, though as yet not proved, that the target cell preserves the bowl shape of the intravascular cell in modified form and resists deforming influences which are responsible for producing the biconcave disk seen in the blood outside the body.

Sternal Marrow Changes During the First Week of Life.

L. M. SHAPIRO AND F. A. BASSEN (*The American Journal of the Medical Sciences*, September, 1941) have investigated sternal marrow changes during the first week of life. At the time of birth the blood of the normal infant has a high content of red cells and hæmoglobin and an elevated reticulocyte count; the red cell and hæmoglobin content falls soon after birth. The accepted explanation is that the change from low to high oxygen tension makes unnecessary in the newborn the large number of red cells which was required in the fœtus; thus a breakdown of redundant red cells takes place. The destruction of these red cells is generally believed to be due to some pronounced hæmolytic process occurring in the blood stream, but the authors think that this view of excessive hæmolysis might be questioned in view of the sharp drop in reticulocyte percentage during the first week of life. Along with the high levels of red cells, hæmoglobin and reticulocytes at birth there is also a high white cell count, and this has also been attributed to hæmopoietic hyperfunction caused by requirements of fœtal existence. But, the authors ask, how is it possible to explain the leucocyte changes during the first week, at which time the white cell count decreases and the blood picture at birth becomes one of lymphocytic predominance? The authors have used sternal puncture in their investigation and they also studied the peripheral blood; the subjects were 35 full-term infants, which were examined in the first twenty-four hours of life and again a week later. They found, as other investigators have done, initial high levels of red cells, hæmoglobin, white cells and reticulocytes. At the end of the first week they found a moderate decrease in red cells and hæmoglobin, a sharp fall in white cells and reticulocytes, and a change in the differential count from myeloid to lymphocytic predominance. The most striking finding in the bone marrow was a pronounced drop in the erythroid elements at the end of the first week of life. This finding, reflected in the peripheral blood by the decreasing reticulocytes, is evidence of curtailed production of new red cells. The authors therefore suggest that the fall in red cells and hæmoglobin which takes place in the first week of life is primarily the result of physiological disintegration of the superabundant red cells carried over from fœtal life in the presence of diminished erythropoiesis.

Normoblastic Crises after Air Raid Injury.

J. G. HUMBLE (*The Lancet*, January 31, 1942) reports three cases in which normoblastic crises followed air raid injury associated with the loss of much blood. He states that when patients suffer severe blood loss (about one litre or more), a profound degree of anæmia may be expected to follow restoration of the blood volume. Hæmoglobin values of 40% (Haldane) with the number of erythrocytes at about 2,500,000 per cubic millimetre, are not uncommon among survivors. Schigdt states that restoration of the blood picture to normal takes about thirty days. During recovery nucleated red cells may be found in the peripheral blood. In the three cases reported by the author a shower of normoblasts and reticulocytes was found seven days after the injury and lasted for one day; recovery was rapid. In the presence of serious infection this reaction does not occur unless the infection is rapidly terminated. The author comes to the following conclusions: (i) normoblastic crises may be found after severe injury, (ii) they are not found in cases complicated by severe sepsis, (iii) their appearance is of good prognostic import.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held on April 23, 1942, at the Royal Alexandra Hospital for Children. The meeting took the form of a number of clinical demonstrations by members of the honorary medical staff of the hospital. Part of this report appeared in the issue of May 16, 1942.

Unilateral Bronchiectasis.

DR. J. SHEDDEN DAVIS showed a female patient, aged four years, who had been admitted to hospital on March 3, 1942, with the complaint of constant cough accompanied by profuse and fœtid sputum. Two years earlier the child had had a bad attack of pertussis, from which she only slowly recovered; she had retained the cough. One year later she had had an attack of bronchopneumonia. She had had profuse fœtid sputum with the cough for some months.

On examination the patient was a poorly nourished child of rather ashen complexion, with pronounced clubbing of all the finger tips. She sat up all the time and any movement at once brought on a spasm of coughing with foul sputum. The percussion note was dull over the whole of the right side of the chest, and many and varied moist sounds were heard. The left side of the chest was fairly normal. Dr. D. G. Vickery saw the child and arranged for her admission to the Royal Alexandra Hospital for Children, with the diagnosis of bronchiectasis following whooping cough. After her admission she quietened a little, her temperature seldom rising above normal; but any movement brought on so much coughing that postural drainage was vetoed, despite the localized appearances in the X-ray picture. In this many cavities were visible, each with its own fluid level, and all of varying sizes, these appearances being confined to the lower half of the right lung.

There was some divergence of opinion as to whether one large cavity on the outer surface was a bronchiectatic cavity or an empyema, so that thoracotomy was undertaken to be sure that the latter was not left unattended to. On March 11, under "Avertin" anæsthesia, with a little ether given by the open method, and with great difficulty because of the cough that occurred as soon as the child was moved from the sitting posture, thoracotomy revealed that the lung was attached to the parietal pleura only by filmy adhesions and that its lower part was of cartilaginous hardness and irregularly lobulated. An incision, after the lung had been stitched to the chest wall, entered a cavity containing extremely foul pus and mucus and communicating with the bronchial tree. An attempt to put a needle into other cavities or cysts failed, partly because of the hardness of the tissues to be penetrated. A drainage tube was then inserted. Some two weeks later a second cyst apparently ruptured into the one drained, as a further discharge of foul pus occurred. Dr. Davis said that the child had had two blood transfusions on account of the anæmia (the red blood corpuscles 3,500,000 per cubic millimetre) with benefit and that an X-ray picture of the antra showed that each of them had thickened mucosa.

On April 2, as the child had survived the risk of septic bronchopneumonia on the left side incident to the anæsthetic, and as her general condition had so much improved, it was decided to institute postural drainage of the lung each day for five or ten minutes. This treatment proved quite successful in helping to empty some or one of the cavities and in reducing the intensity of the cough and the amount of sputum in the day-time. Despite the lack of evidence by X-ray examination of any noticeable change in the pathological condition of the lung, the child's condition was immensely better; she now slept with only one pillow under the head and upper part of the chest.

Dr. Davis went on to say that the sequence of events seemed to have been pertussis with multiple rupture of bronchi in the lower half of the right lung (some congenital weakness might have been present), then infection of the multiple cavities, and their gradual dilatation by partial occlusion from the bronchial tree. Despite the fact that the child on admission to hospital seemed doomed, the immediate prognosis was now good on the whole; but the ultimate prognosis was bad unless lobectomy could be successfully performed at some later date. In the differential diagnosis cystic disease of the lung had to be considered and could hardly be absolutely excluded. This was generally regarded as a late stage of congenital bronchiectasis, which might be (*a*) atelectatic, (*b*) telangiectatic or (*c*) universal. Atelectatic bronchiectasis was based on atelectasis in some part of the lung, followed by fibrositic induration of the lung tissue and subsequent (perhaps consequent) dilatation of the bronchial passages included in the mass. Some authorities held that the bronchiectatic condition was a primary congenital anomaly. The absence of any respiratory troubles prior to pertussis almost excluded this condition in the case under discussion. In telangiectatic bronchiectasis, cysts from three to twenty millimetres in diameter were scattered through some portion of one or both lungs. These cysts were rounded dilatations occurring in the course of the smaller bronchioles. The lung tissue between the cysts inclined to emphysematous changes, and the cysts were in communication with the bronchial tree. The case under discussion might be one of the development possibly occurring in such a condition when pertussis and sepsis were added, throwing many smaller cysts into larger ones; but in Dr. Davis's judgement, Dr. Vickery's opinion was correct. Universal bronchiectasis was a rare condition, and all patients suffering from it had died within the first year of life. In some of them the whole of one lobe of the lung was transformed into one large cyst, about 11·0 by 9·0 centimetres in size, communicating with a bronchus. Some cases had been reported in stillborn immature children. The term "universal" meant that the whole of one main bronchus with its branches was dilated to form one cavity. The cause of such early bronchiectasis was unknown. In some cases it was a congenital condition, in others the result of an acquired atelectasis. Failure of development of part of the bronchial tree had been postulated, and also an intrauterine inflammatory block of a bronchus with subsequent dilatation due to retained secretion. If the idea was accepted that the condition in the case under discussion was wholly due to pertussis, it would seem that the violence of the cough ruptured the bronchial tree in several places in the lower lobe of the right lung, and with a pneumonic consolidation present or subsequent and the later fibrosis of the lung due to failure of resolution, the bronchiectatic cavities gradually became dilated, chiefly owing to their being shut off (either by valve action or perhaps intermittently) from the main bronchial tree.

Myasthenia Gravis.

DR. L. H. HUGHES showed a female patient, aged three years, suffering from *myasthenia gravis*. This case will be reported in full in a later issue of the journal.

Rheumatoid Arthritis and Rheumatism.

Dr. Hughes also showed a male patient, aged ten years, who had been admitted to hospital on March 17, 1942. Two months previously he had complained of tiredness. He became very thin and perspired at night; pain in the joints was also present. The knees, elbows and shoulders became swollen, and the child began to limp a few weeks prior to his admission to hospital.

On examination it was found that the heart was not enlarged; a rough murmur was audible in the pulmonary area. No pain or swelling in the joints was present. The blood sedimentation rate on March 19 was normal. A blood count revealed slight secondary anæmia. X-ray examination of the chest revealed no abnormality. On March 31 the anterior surface of the right wrist became swollen and some puffiness of the left wrist was noted. The child was unable to close his fingers at night. A loud systolic murmur was audible in the pulmonary area.

Hydatid Cyst of the Femoral Artery.

DR. C. H. WESLEY showed a boy, aged six years, who had had a hydatid cyst of the femoral artery. This case will be reported in full in a later issue of the journal.

Traumatic Arterio-Venous Aneurysm.

Dr. Wesley also showed a male patient, aged seven years, who had been admitted to hospital on May 26, 1941. The child had in an accident cut an artery in the right thigh twelve months earlier; a swelling had been noticed by the mother in the child's right thigh near the site of the injury; it had been present for two months prior to the child's admission to hospital, and at times it grew larger.

On examination a scar was noticed on the anterior surface of the right thigh in the middle third; there was a small swelling just medial to the scar, which gave a palpable thrill synchronously with the pulse.

At operation on June 11 an incision was made along the line of the femoral artery and the aneurysm was exposed. The proximal portion of the artery and then the distal portion of the vein were ligated, as were the proximal and then the distal portions of the veins and artery leading to

the aneurysm. The artery distal to the sac was completely stenosed at its junction with the sac. The aneurysm sac was then removed and the skin was closed. The wound healed uneventfully and the pulsation in the right posterior tibial artery considerably improved.

Ischio-Femoral Arthrodesis for Tuberculous Arthritis of the Hip.

DR. R. G. L. STEPHEN showed a female patient, aged six years, who had first been admitted to hospital on April 3, 1938. At that time she had been limping with the left leg for one year; the limp had grown worse and the leg was becoming wasted. The child was losing weight and was having occasional "night starts". She had pain in the hip both day and night. There was a family history of tuberculosis.

On examination the child was seen to lie with the left thigh in about 20° of fixed flexion. All movements were limited to about half the normal range. About three-quarters of an inch of wasting of the left thigh was noticed, but there was no swelling. The Mantoux test produced a positive reaction. An X-ray examination revealed probable tuberculous arthritis of the left hip. The child was kept immobilized on a frame. On August 30, 1938, a further X-ray examination suggested commencing subluxation of the hip. Later a tuberculous abscess developed, which was aspirated and later broke through. A third X-ray examination in July, 1939, revealed further destruction. A fourth examination on December 20, 1939, suggested that healing with partial subluxation was occurring.

In March, 1941, the child was allowed up and was permitted to walk in a plaster cast. An X-ray examination revealed no further bone destruction. She was discharged from hospital in December, 1941.

In February, 1942, the child was readmitted to hospital and an operation was performed on February 19. A three-inch bone graft was taken from the right tibia. A chisel was pushed through the left femur about one inch below the tuberosity, fracturing the wall of the pelvis, and the bone graft was inserted along the line of cleavage; a plaster spica was applied. The child was still in the plaster spica at the time of the meeting, and was to remain in it for at least three months.

Multiple Exostosis and Hereditary Congenital Deformity.

DR. B. DENNING showed a male patient, aged seven years, who had a deformity of the right forearm which had been noticed for twelve months only. He used both hands equally well, but was inclined to be left-handed. Examination revealed considerable deformity of the right forearm, with multiple exostosis and congenital absence of the lower end of the ulna. The child's father had a similar deformity in his left forearm.

Congenital Atresia of the Parotid Duct.

DR. G. M. B. HALES showed a female patient, aged two months, who had been admitted to hospital in September, 1941, with a swelling involving the left parotid gland and some swelling of the eyelid. At operation an abscess was opened and pus was drained; the pus was found to be streptococcal. The child was readmitted to hospital on October 13 with the complaint that the swelling had recurred. On examination a hard indurated swelling was found in the region of the left parotid gland; the swelling was not fluctuant. The right parotid gland appeared normal. No duct for the left parotid gland could be found.

At operation on October 14 an incision was made through the skin over the left parotid gland. A tract was made from the gland to the mucous membrane of the mouth. Strands of silkworm gut were then put through the tract to act as an irritant, with a view to the formation of a sinus. The skin incision was then sutured. The child was once more anæsthetized on November 11; the artificial duct was found to be patent and leading to the parotid gland. It was probed and the child was discharged from hospital.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 132, of May 7, 1942.

CITIZEN NAVAL FORCES OF THE COMMONWEALTH.

Royal Australian Naval Reserve.

Secondment to Royal Australian Air Force.—Surgeon Commander Clive Henry Reynolds James is seconded for service in the Royal Australian Air Force, dated 20th April, 1942.

Royal Australian Naval Volunteer Reserve.

Grant of Acting Higher Rank.—Surgeon Lieutenant-Commander Reginald Francis Matters is granted the acting rank of Surgeon Commander, dated 14th April, 1942.

AUSTRALIAN MILITARY FORCES.

Australian Army Medical Corps.

Lieutenant-Colonel J. Leah is brought on the authorized establishment of Lieutenant-Colonels and is appointed to command a Field Ambulance, 16th February, 1942.

Lieutenant-Colonel N60147 C. L. S. Macintosh, D.S.O., from the Unattached List is appointed to command a General Hospital, 1st September, 1941.

Captain (Temporary Major) R. B. Perkins is appointed to command a Field Ambulance, 19th February, 1942, and to be Lieutenant-Colonel (temporarily), 9th March, 1942.

The following officers are transferred from the Australian Imperial Force: Major A. W. L. Row and to be Captain and Major (Temporarily), 20th January, 1942; Captains QX24600 J. H. Thorpe and QX25628 G. A. McLean, 26th February, 1942; QX24533 H. Glynn-Connolly, QX25549 A. F. McSweeney, QX25551 A. W. Eklund and QX25550 C. H. Mansfield, 9th March, 1942, and J. H. Currell, 27th March, 1942.

Captain (provisionally) (Temporary Major) N101031 V. J. McGovern is transferred, relinquishes the temporary rank of Major and is placed on a Regimental Supernumerary List, 28th March, 1942.

Honorary Captain A. R. Thorne is appointed from the Reserve of Officers, and to be Captain (provisionally) and Major (temporarily), 7th June, 1941 (in lieu of the notification respecting this officer which appeared in Executive Minute No. 220/1941, promulgated in *Commonwealth Gazette* No. 266 of 1941).

The following officers are appointed from the Reserve of Officers and to be Captains (provisionally):

Honorary Captains I. W. W. Charles, 24th January, 1942, G. P. Hildebrand and G. M. Redshaw, 16th March, 1942, J. K. Bowler, 23rd March, 1942, N393128 G. H. H. Gall, 24th March, 1942, D. W. Fleming, 25th March, 1942, Honorary Major B. C. Cohen and Honorary Captains E. N. Nash and E. W. Arndt, 4th April, 1942.

To be Colonel (temporarily).—Captain (Temporary Lieutenant-Colonel) N100948 W. Wood, 27th February, 1942.

Captain (provisionally) Q119213 K. R. McGregor is brought on the authorized establishment of Captains and to be Major (temporarily), 28th March, 1942.

To be Majors (temporarily).—Captain N27260 G. S. Flynn, 1st April, 1942; and Captain (provisionally) Q140669 I. H. MacGillivray, 4th April, 1942.

To be Major (provisionally).—John Francis Gaha, 7th April, 1942.

To be Captains (provisionally).—Margery Scott-Young and John William Harper Mulhearn, 10th April, 1942, and Louis Albert Maria Bellotti Musso, 11th April, 1942.

To be Honorary Captains.—Joane Josephine Harris, 30th March, 1942; Sir Charles Norman Paul, 31st March, 1942; and Robert Grey, 2nd April, 1942.

Lieutenant-Colonel (Temporary Colonel) E. S. Meyers, E.D., relinquishes command of a General Hospital and the temporary rank of Colonel, and is placed on the Retired List, 19th March, 1942.

Lieutenant-Colonel (Temporary Colonel) E. Culpin relinquishes command of a General Hospital, is transferred, relinquishes the temporary rank of Colonel and is placed on a Regimental Supernumerary List, 26th March, 1942.

Major (Temporary Lieutenant-Colonel) M. S. S. Earlam relinquishes the command of a Casualty Clearing Station and is appointed to command a Field Ambulance, 19th February, 1942.

Lieutenant-Colonel H. H. Jamieson, E.D., is transferred from the Unattached List, 16th February, 1942.

Honorary Lieutenant-Colonel Sir H. B. Devine is appointed from the Reserve of Officers and to be Lieutenant-Colonel, 23rd March, 1942.

Captain (provisionally) N27257 F. A. E. Lawes is transferred to the Reserve of Officers (A.A.M.C.), 11th March, 1942.

Captain (provisionally) (Temporary Major) N75075 W. T. J. Harris is retired, 27th February, 1942.

Captain C. Dinwoodie is appointed from the Reserve of Officers, 4th April, 1942.

The following officers are appointed from the Reserve of Officers and to be Captains (provisionally):

Honorary Captains C. L. Paine, 24th January, 1942; and H. Dolman, 23rd March, 1942.

To be Majors (temporarily).—Captains (provisionally) S35731 L. J. T. Pellew, 25th March, 1942; and H. Earnshaw, 26th March, 1942.

To be Captains (provisionally).—Samuel Rudolph Gerstman, Percy Bartak, Rupert Francis Leslie Harvey, William Joseph Henry, William James Allen, Ainslie Francis Agnew, Ian Clinton James and John Stewart, 2nd April, 1942.

Honorary Captain G. V. Stanton is retired, 25th March, 1942.

To be Honorary Captains.—James Joseph Hamilton, Robert Smith Blair and Alexander John Thomas Aram, 25th March, 1942; and Laurence Osborne Rutherford, 26th March, 1942.

CASUALTIES.

ACCORDING to the casualty list received on May 13, 1942, Captain S. E. J. Robertson, A.A.M.C., Bellevue Hill, New South Wales, is reported missing, believed prisoner of war.

Correspondence.

BASS AND FLINDERS.

SIR: In your review of Miss Ernestine Hill's book "My Love Must Wait" you refer to her choice of title as not being satisfactory. It seems to me that the title is an excellent one. Too often the personal sacrifice of men and women to whom we owe so much is either neglected or misinterpreted. By her title "My Love Must Wait" Miss Hill has respected the finer feelings of her heroes—and ours.

Yours, etc.,

J. L. WHITWORTH.

Kalorama,
Victoria,
May 8, 1942.

CORRIGENDUM.

SIR: In my letter "The Painful Shoulder" in your issue of the 9th instant, is an error which I overlooked.

In the ninth paragraph, "Over 8% of individuals . . ." should read "Over 80% of individuals".

Yours, etc.,

E. HASLETT FRAZER.

231, Macquarie Street,
Sydney,
May 11, 1942.

A REQUEST TO VICTORIAN PRACTITIONERS.

SIR: THE MEDICAL JOURNAL OF AUSTRALIA has been requested to bring the following to the notice of members.

Many of the accounts for treatment of workers' compensation cases submitted by doctors to the Victorian Railway Department show only the name and one initial of the patient.

This department has State-wide activities and employs about 24,000 men and some hundreds on casual work. Each of its nine branches keeps accurate staff records, but a problem in identification is set the department every time an account is received bearing only the above meagre details. Delay in settling these accounts inevitably follows.

About 3,000 accounts are received annually, and doctors will appreciate that it is of mutual advantage to have all accounts show the patient's full name and the branch of the railways in which he is employed.

The department would be glad of the cooperation of all its Victorian members who have treated railway employees.

Yours, etc.,

A. W. BOWMAN,
Chief Medical Officer,
Victorian Railways.

Secretary's Office,
Spencer Street,
Melbourne, C.1.
May 15, 1942.

Obituary.

CHARLES NAPIER FINN.

WE have to thank Air Vice-Marshal Victor Hurley for the following appreciation of the late Dr. Charles Napier Finn.

The death of Dr. Charles Napier Finn will be deeply regretted by his many friends, and especially by those who knew him and served with him in the Great War of 1914-1918.

He was born in Invercargill, New Zealand. His father was Peter Thomas Finn, a barrister, who was at one time attorney-general for Victoria. His mother was a daughter of Colonel Stamp, who was at one time governor of the convict settlement in Tasmania.

Dr. Finn was a graduate of the Edinburgh University, and prior to 1914 practised as an eye, ear, nose and throat specialist in Western Australia. He left Australia for active service abroad with the Fourth Field Ambulance under the command of the late Lieutenant-Colonel Beeston, and served with it in Gallipoli and in Egypt. Later in the war he carried out work in his own specialty at Australian hospitals in France and England. He was mentioned in dispatches and awarded the O.B.E.

In the field Charlie Finn earned the admiration and appreciation of all those who served with him. His quiet and unruffled courage at all times, and high sense of duty, earned him the affection and confidence of the men serving under him as well as of his brother officers. He was at his best when the pressure was on and the work to be done more than usually dangerous or difficult. He accepted the ups and downs and inevitable hardships in the field as part of the day's work with a characteristically cheerful smile or whimsical quip to which his men invariably responded. He was kindness itself to those in real trouble or sickness, but had little sympathy for grousers and lead-swingers. Many were the stories told of Finn's patient and often unorthodox methods to circumvent the malingerer or to persuade a case of hysterical aphonia to speak.

His interests were wide and varied, and on his times off duty he delighted to arrange long rambles round the French countryside, exploring all the places of interest in the neighbourhood, often finishing up at an inn for dinner, where he was always welcome.

His ready wit and entertaining conversation made him always a popular member of the mess, and many will remember some of Finn's anecdotes and flashes of repartee.

In addition to his own specialty he was an expert anæsthetist, and like so many Scottish graduates, was a skilled chloroformist, whose services were sought when cases of special difficulty had to be dealt with.

Soon after his return from the war he married Miss Dolly Castles and commenced practice as an eye specialist in Melbourne. His wife was a talented singer, and with her sister Amy was well known to Melbourne audiences. His sudden death came as a great shock, and his active figure and cheery smile will be greatly missed by all those who were privileged to know him.

Dr. A. E. Rowden White writes:

Many will remember Charles Napier Finn at Number 2 Australian General Hospital, Wimereux, near Boulogne, France, in the Great World War. Picturesque, shock-haired, tall, and with a long stride, he would be seen punctually walking along a long lane of pavilion-wards to the end one, where there would be numerous "out-patient" diggers awaiting his attention for ophthalmological care and treatment. It was always the unanimous opinion of the patients that they had a "good spin" from the major, and they went away impressed with full instructions what to do, because it was his habit to repeat at least three times what they were to do. Besides being a first-class oculist, he outshone everyone at golf, and many of us will always remember the interesting contests we had with him. Although his moods were impetuous at times, he never displayed this side of his character at golf, and every one of us admired and envied the patience and care he showed in playing shots when in difficult situations. Finn was a staunch companion and good influence in the mess because of his frank opinions, sincerity of purpose, and blunt directness whenever he felt any order should be observed or carried out. Everyone will recall with amusement an incident which occurred at Boulogne when a British general failed to return Finn's salute.

Major Finn's early training at the Geelong Grammar School and the Scottish universities developed scholarly habits in his reading, and as he spoke French fluently he

was much sought after by his fellow officers for walks about the very interesting historical parts of Boulogne. During the exciting few weeks before the armistice we always awaited with eagerness Finn's rapid translation of the news from the local newspaper every morning.

ROBERT HENRY JONES.

WE regret to announce the death of Dr. Robert Henry Jones, which occurred on May 14, 1942, at Woollahra, New South Wales.

WILLIAM JOHN YOUNG.

WE regret to announce the death of Professor William John Young, of the University of Melbourne, which occurred at Melbourne on May 14, 1942.

Nominations and Elections.

THE undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

Holman, Elton Dudley, M.B., B.S., 1941 (Univ. Sydney), Royal Prince Alfred Hospital, Missenden Road, Camperdown.

Hughes, William Henry Childe, M.B., B.S., 1940 (Univ. Sydney), Lake Crescent, Teralba.

Smyth, John Justin, M.B., B.S., 1941 (Univ. Sydney), 615, Forest Road, Bexley.

Rosenman, David Hersch (registered in New South Wales, December, 1941, in accordance with the provisions of section 17A of the *Medical Practitioners Act*, 1938-1939), c.o. Dr. Blaxland, Chertsey Street, Merrylands.

Stephens, Max, M.D., 1936 (Univ. Paris), The New Yorker, Roslyn Avenue, Elizabeth Bay.

Medical Appointments.

Dr. William Christie has been appointed a Member of the Advisory Council of Education under the provisions of the *Education Act Amendment Act*, 1941, of South Australia.

Books Received.

"Acute Injuries of the Head: Their Diagnosis, Treatment, Complications and Sequels", by G. F. Rowbotham, B.Sc. (Manchester), F.R.C.S. (England), with a foreword by N. M. Dott, M.B., Ch.B. (Edinburgh), F.R.C.S. (Edinburgh); 1942. Edinburgh: E. and S. Livingstone. Crown 4to, pp. 300, with 124 illustrations. Price: 25s. net.

"A Theory that any Organism is a Single Chemical Molecule put forward as the Key to the Problem of the Causation of Neoplasms", by T. L. Cleave, M.R.C.P. (London), with an Introduction by C. P. Stewart, M.Sc. (Dunelm), Ph.D. (Edinburgh); 1941. Bristol: John Wright and Sons Limited. Crown 4to, pp. 24.

"The Australian Guerrilla, Book I: Shoot to Kill", by I. L. Idriess; 1942. Sydney: Angus and Robertson Limited. Crown 8vo, pp. 92. Price: 2s. net.

"David J. Farrell's Anatomy and First Aid in Pictures", by D. J. Farrell, with a Foreword by H. R. G. Poate, Kt. St. John, M.D., M.B. (Sydney), F.R.C.S. (England), F.R.A.C.S.; 1942. Marrickville: D. J. Farrell; Northwood: F. H. Johnston. Crown 4to, pp. 16. Price: 1s. 6d. net.

"Anæsthetics Afloat", by surgeon Lieutenant Commander Ronald Woolmer, R.N.V.R., B.A., B.M., B.Ch. (Oxon), D.A., with an introduction by Surgeon Captain H. D. Drennan, D.S.O., R.N.; 1942. London: H. K. Lewis and Company Limited. Crown 8vo, pp. 130, with 18 illustrations. Price: 6s. net.

"The Principles of Anatomy as Seen in the Hand", by Frederic Wood Jones, D.Sc. (London, Adelaide and Melbourne), F.R.S., F.R.C.S.; Second Edition; 1941. London: Baillière, Tindall and Cox. Royal 8vo, pp. 428, with 2 plates and 144 illustrations. Price: 25s. net.

"A Man Who Found a Country", by A. Nakashian; 1941. London: George Allen and Unwin Limited. Demy 8vo, pp. 288, with 2 plates. Price: 12s. 6d. net.

"A Handbook of Ophthalmology", by Humphrey Neame, F.R.C.S., and F. A. Williamson-Noble, F.R.C.S.; Fourth Edition; 1942. London: J. and A. Churchill Limited. Medium 8vo, pp. 336, with 12 plates, containing 46 coloured illustrations and 143 text figures. Price: 18s. net.

"St. Vincent's Hospital Pharmacopœia", First Edition; 1942. Sydney: Dymock's Book Arcade Limited. Demy 16mo, pp. 95.

Diary for the Month.

MAY 28.—South Australian Branch, B.M.A.: Branch.
MAY 28.—New South Wales Branch, B.M.A.: Branch.
MAY 29.—Tasmanian Branch, B.M.A.: Council.
JUNE 3.—Western Australian Branch, B.M.A.: Council.
JUNE 4.—South Australian Branch, B.M.A.: Council.
JUNE 5.—Queensland Branch, B.M.A.: Branch—Joseph Bancroft Memorial Lecture.
JUNE 9.—Tasmanian Branch, B.M.A.: Branch.
JUNE 12.—Queensland Branch, B.M.A.: Council.
JUNE 17.—Western Australian Branch, B.M.A.: Branch.
JUNE 25.—New South Wales Branch, B.M.A.: Branch.
JUNE 25.—South Australian Branch, B.M.A.: Branch.
JUNE 26.—Queensland Branch, B.M.A.: Council.
JUNE 26.—Tasmanian Branch, B.M.A.: Council.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia.

Editorial Notices.

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